



South East Edinburgh Transport Economic Potential Study

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Final Report

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Colin Buchanan
4 St Colme St
Edinburgh
EH3 6AA

Tel: 0131 226 4693
Fax: 0131 220 0232
email : edin@cbuchanan.co.uk

Steer Davies Gleave
3rd Floor, Ingram House
227 Ingram St
Glasgow, G1 1DA

Tel: 0141 224 0990
Fax: 0141 224 0999
email: glasgowinfo@sdgworld.net

Prepared by:



John Siraut

Approved by:



Rupert Ingham

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Executive summary

Introduction

The 2006 Eddington Transport Study, undertaken by Sir Rod Eddington on behalf of the DfT, confirmed that there is a demonstrated link between economic growth and transport provision and that continued investment is required in transport to maintain the UK's economic position.

This report explores the economic potential of a significant step change in public transport accessibility and service between Edinburgh city centre and its south eastern quarter. A variety of analytical techniques have been used alongside consultation with investors, developers, property agents, businesses in general, and various arms of government. Lessons learnt from other cities that have seen such step changes in public transport provision and are developing bio-medical clusters have also been applied to the analysis.

The core study area covers a corridor from Edinburgh Waverley, south to Cameron Toll and then on to the Royal Infirmary and the new BioQuarter development site. Two extensions of this study area have also been considered, as areas where a step change in public transport accessibility might be expected to have a wider economic benefit. Both of these are conceived around potential connectivity with the planned Borders Railway and they have been referred to as the "outer corridors". The first is a broad area heading eastwards from the BioQuarter towards Musselburgh and the second is a corridor extending southwards from the BioQuarter to Eskbank/Dalkeith.

Baseline assessment

Edinburgh is a prosperous city with a highly qualified workforce earning above average wages and with below average unemployment. The city accommodates far more jobs than workers meaning high levels of in commuting and hence supporting the economy of a much wider area. Some 32% of jobs are in financial and business services demonstrating the importance of the city to the growth and performance of the Scottish economy. Tourism is another important sector accounting for some 10% of the city's jobs.

However, within this prosperous and highly performing city there are pockets of deprivation. Many of these deprived areas are concentrated towards the south east of the city along the core corridor the study covers.

Consultation with investors and developers found the south east segment of the city is presently perceived as not an area to invest in mainly due to perceptions of poor accessibility.

Development potential

Whilst there is potential for some imaginative land use developments along the Waverley-BioQuarter corridor, with the exception of the BioQuarter itself, new development opportunities are limited and would be dwarfed in scale by the BioQuarter.

Connecting with the planned Borders Railway at the Shawfair Station (the BioQuarter to Musselburgh corridor) or at the Eskbank Station (the BioQuarter to Dalkeith corridor) offers the potential for significant long term economic development. Given the amount of land theoretically available (it should be stressed not all or any may come forward) we envisage in the very long term that both of these corridors have the potential to deliver a substantial amount of the new housing and employment development needed for Edinburgh to continue its strong economic performance. This is broadly in line with the aspirations set out in the region's various spatial policy documents. Whilst there is considerable uncertainty about the scale and timing of development along these corridors, we have estimated the following potential in the two outer corridors:

- BioQuarter to Musselburgh corridor: 3,000 housing units and 12,500 jobs associated with:
 - 50,000sqm commercial space for local needs; and
 - 200,000sqm of strategic commercial space
- BioQuarter to Dalkeith corridor: 2,500 housing units and 10,000 jobs associated with:
 - 50,000sqm commercial space for local needs; and
 - 150,000sqm strategic commercial space

The proposed BioQuarter phase 4 development is included in both corridors and could account for up to 6,500 of the potential jobs.

Given that a proportion of new residents will need to access employment opportunities across Edinburgh and the strategic employment will need to access employment catchments regionally, it is clear that development on this scale can only be delivered with a radical improvement in transport accessibility. Both corridors, by offering the potential to connect with the planned Borders Railway, provide improved access from the Borders to development sites in south east Edinburgh. SESplan suggests there is potential for nearly 20,000 homes along the Borders Railway catchment and one could expect a significant proportion of new residents to be seeking employment in Edinburgh. The BioQuarter to Musselburgh corridor also has potential for connectivity with rail services from North Berwick and Dunbar, further increasing employment catchments.

Economic impact, jobs and GVA

The economic impact of this scale of development is dependent on the nature of employment attracted. It is assumed that employment within the BioQuarter and the strategic commercial space in both of the outer corridors is aimed at non-local occupiers. That is, occupiers who have a choice of location of Edinburgh or elsewhere. Evidence from elsewhere as highlighted in the case studies undertaken for this study is that there are a wide range of factors that organisations take into account when making location decisions and Edinburgh could be expected to score highly in many of these. However, if developments at and around the BioQuarter are to compete internationally, potential investors need to be convinced they can draw upon a labour catchment area that goes beyond the city and can attract specialist skills to the area through factors such as, for example the offer of a more sustainable life style. This means not just good car based access but good public transport access as well as by rail and road to maximise the possible labour catchment area.

In assessing the economic impact of housing and the *local* employment development (such as retail) in turn facilitated by significant public transport improvements in these corridors, a conservative approach has been taken, which assumes this development to be attracted from elsewhere within the region or nationally. It has therefore been assessed that no additional local or regional economic benefit will accrue from such development (although there is the potential for economic benefits if the development helps to retain more consumer spending in the city). The benefit will generally just be displaced from one part of the city to another albeit from a more socially deprived area to a more prosperous one.

However, a portion of the employment associated with strategic commercial development potential could be expected to be additional to the city region and to Scotland. Where that additional development is expected to be delivered anyway, without a step change in public transport (such as phase 1-3 of the BioQuarter) it might be accelerated. Some of the development potential, including further expansion of the BioQuarter (phase 4), is expected to be dependent on a step change in public transport, as well as other critical factors.

An acceleration of phase 1-3 development at the BioQuarter – and its associated 6,000 jobs - is estimated potentially to contribute around £330-385m (40 year npv discounted at 3.5%) to the regional economy and £220m to that of Scotland. This is based on a range of assumptions consistent with experience elsewhere, including that the period of build out for these development phases could be reduced by 3 years (in this case from 15 to 12 years).

In the two outer corridors beyond the BioQuarter it is assumed that part of the developments will be a further expansion of the BioQuarter itself (phase 4) and supporting services. These are also expected to be partly additional to the city region / Scotland and are considered to be *dependent* on a step change in public transport (as well as other factors). Effectively this would be a doubling of BioQuarter activity in the long term broadly in line with aspirations for the future development of a bio-medical cluster in the area with development assumed to take place over a 30 year period. The potential of the two corridors has been estimated as follows:

- BioQuarter to Musselburgh corridor: 6,000 to 7,000 permanent additional city region jobs (4,000 additional Scottish jobs) created over a 30-year period, with city region benefits estimated at £4.7-5.4bn (40 year npv) and the national benefits at £3.1bn
- BioQuarter to Dalkeith corridor: 4,500-5,250 permanent additional city region jobs (3,000 additional Scottish jobs), with city region benefits estimated at £3.5-4.1bn (40 year npv) and the national benefits at £2.3bn

It is stressed that these are potential impacts which are dependent on a range of assumptions which may in reality not be realised due to, for example, market or environmental constraints.

The second source of economic impacts is agglomeration benefits. The theory of agglomeration is that economic activity is more productive the more it is concentrated. This occurs for a number of reasons:

- A deeper and larger labour market
- Greater specialisation in supply
- Knowledge spillovers, with expertise being more widely shared

Using the standard Department for Transport methodology to calculate these benefits they equate to just under £200m (again 40 year NPV) arising from improving access and supporting economic growth in Edinburgh city centre. These are benefits to both Edinburgh and Scotland.

The total potential benefits therefore of radically improved transport links between Waverley and Musselburgh are in the region of £5-5.8bn for Edinburgh city region and £3.5bn for Scotland while between Waverley and Dalkeith they are in the order of £3.8-4.5bn for Edinburgh city region and £2.7bn for Scotland.

Other impacts

Evidence from other cities with high quality public transport shows that there are a range of other intangible but no less important benefits. Choice of transport mode is closely correlated to socio-economic status and gender and this has important consequences on social and regeneration policies. Whilst Edinburgh has an excellent city wide bus service used by all sectors of society it is still the case that its use is heavily biased towards lower socio-economic groups including the elderly and is more heavily used by women. Rail use on the other hand is biased towards higher income groups and men. Car use tends to be undertaken by middle to higher income groups and by men more than women. Interestingly use of tram systems is far more representative of the socio-economic and gender make up of the areas that it serves.

Modern fixed routes and networks are more readily navigable by users especially the mobility impaired, those with learning difficulties and occasional users (including tourists). While low floor buses and Edinburgh's excellent bus network and information makes it easier to get around the city compared to some other locations it is still less attractive to many types of potential users than alternative fixed route systems.

Conclusions

The image that a city presents to both the outside world and its own citizens is important in terms of attracting and retaining mobile investment. Many cities market themselves on the back of the quality of

their transport infrastructure. As Eddington highlighted it is important for cities to be able to offer the largest possible labour catchment area to employers and good quality links to international gateways. A high quality transport system that does this in Edinburgh will generate substantial economic benefits that have the potential to be worth billions of pounds to both the regional and national economy.

The work undertaken has shown how a step change in public transport provision in south east Edinburgh will help economic development. Introducing a high quality, fixed link transport service to the area, along with other transport interventions could be a catalyst to unlocking the significant economic development potential identified in this report.

An extension of the tram system now under construction would be an obvious example of this type of service. However, it is not the purpose of this document conclusively to propose a mode of transport. This should be established using an objective-led approach, acknowledging the potential identified in this study, and incorporating the applicable transport planning frameworks (for example the Scottish Transport Appraisal Guidance - STAG).

1 Introduction

1.1 Background

- 1.1.1 Steer Davies Gleave and Colin Buchanan have been commissioned to undertake an economic potential study for south east Edinburgh. It was commissioned by a partnership involving City of Edinburgh Council, University of Edinburgh, Scottish Enterprise, NHS Lothian and Edinburgh Trams.
- 1.1.2 This report sets out the economic potential of a step change in public transport links from central Edinburgh to the south east quadrant of the city. There is a demonstrated link between economic growth and transport provision.
- 1.1.3 The evidence was reviewed and reported in the Eddington transport study which was undertaken by Sir Rod Eddington on behalf of the DfT in 2005. It set out to examine the long term links between transport and the UK's economic productivity, growth and stability. Eddington reported that good transport systems are key to supporting the productivity of urban areas, supporting deep and productive labour markets, and allowing businesses to reap the benefits of agglomeration. He went on to report that transport corridors are the arteries of domestic and international trade boosting UK competitiveness.
- 1.1.4 Eddington also reported on the growing significance of cities and large urban areas, as highly productive centres of the service-based economy. He found 55 per cent of commuter journeys are to large urban areas and 89 per cent of delay caused by congestion is in urban areas. To quote from his recommendations:
- 1.1.5 *"I'm in no doubt that the key challenge is to ensure the transport networks can support the success of one, the growing urban catchments; two, key inter-urban corridors; and three, key international gateways. These should be the economic priorities for the UK because they are both highly productive and growing. These key transport links are heavily used today and show congestion and reliability problems, which will get worse. These are the places where transport constraints hold back economic growth.*
- 1.1.6 *My second recommendation to government is therefore to target future growth-focused investment on growing urban catchments; key inter-urban corridors; and key international gateways."*
- 1.1.7 Within densely built up conurbations such as Edinburgh it is increasingly difficult to provide additional capacity for private transport. Therefore if economic and employment growth is to continue it must be achieved by step changes in public transport capacity and service.
- 1.1.8 The remainder of the document sets out:
- The policy context
 - Transport context
 - Consultation undertaken
 - Case studies from other developments
 - Development opportunities along the corridors
 - Economic impact
 - Other potential impacts
- 1.1.9 Separate appendices contain the background supporting evidence and bibliography used to compile this report.

- 1.1.10 It must be stressed that this is an economic potential report. That is, it sets out what is feasible based on experience elsewhere, it is not a forecast or a prediction of what will happen. Many factors impact on economic growth, most of which are outwith the control of local actors. However, local decisions on transport and planning can make significant differences in the position of a city with respect to its competitors when it comes to attracting and retaining mobile investment. This investment, which is often competing in a global market, is a key driver of regional and national economic growth.

2 Baseline analysis

2.1 Introduction

2.1.1 The study area was originally defined as being a corridor from central Edinburgh (Waverley) to the BioQuarter via Cameron Toll. This area was extended beyond the BioQuarter along two “outer corridors”, namely:

- BioQuarter to Musselburgh via Shawfair; and
- BioQuarter to Dalkeith.

2.1.2 Figure 2.1 shows these two indicative corridors.

2.1.3 This chapter sets out some of the key socio-economic indicators, as well as current and proposed transport links for each of these areas.

2.2 Socio-economic baseline

2.2.1 Edinburgh is a prosperous city with a highly qualified workforce earning above average wages and with below average unemployment. Its population is estimated to be around 478,000 of whom 262,000 are economically active. But the city also accommodates 338,000 jobs necessitating high levels of in-commuting and hence supporting the economy of a much wider area.

2.2.2 Around 22% of the workforce is in professional occupations compared to 13% for Scotland as a whole and 44% are qualified to NVQ4 and above, 10 percentage points higher than the Scottish average. As a consequence average workplace earnings are 9% higher than the Scottish average.

2.2.3 Some 32% of jobs are in financial and business services demonstrating the importance of the city to the growth and performance of the Scottish economy. Tourism is another important sector accounting for some 10% of the city's jobs, slightly above the Scottish average of 9%.

2.2.4 The south east Edinburgh area already supports Life Sciences developments and a number of the key policy documents identify the area as a growing focus for the Life Sciences sector in Scotland and the UK. Scotland is home to the second largest Life Sciences Cluster in the UK employing almost 31,500 people, representing nearly 1% of Scotland's employment, in 620 organisations. Although subject to some volatility, the sector continues to grow strongly - up over 20% in a decade (outgrowing increases in GVA as a whole) - and is an important part of the Scottish economy. Productivity levels within the sector vary but are significantly higher than in the service sector and in some areas such as pharmaceuticals outstrip the manufacturing average.

2.2.5 However, within this prosperous and highly performing city there are pockets of deprivation. As shown in Figure 2.2, some parts of the south east of the city fall within the 10% most deprived areas in Scotland using the Index of Multiple Deprivation. These areas of deprivation and poorer areas are well illustrated in the figures that follow. Figure 2.3 shows the percentage of the population aged between 16 and 74 (deemed to be of working age) who are currently unemployed. The maps show that in the South East Edinburgh area there are pockets of high unemployment, notably in Craigmillar / Niddrie / Greendykes, Moredun, Gracemount and some areas within Dalkeith.

2.2.6 Similar patterns are observed in Figure 2.4 which shows the percentage of households where the property is rented from a housing association or the local council. High

proportions of households in Craigmillar / Niddrie / Greendykes, Moredun, Gracemount and some areas within Dalkeith are rented in this way. Home ownership levels tend to increase when an area is more prosperous.

- 2.2.7 Figure 2.5 indicates the percentage of households who do not have access to a private vehicle and who are potentially more dependent on public transport to access employment, education, health and other opportunities. It can be seen within the area that there are a large numbers of areas where more than 50% of the population do not have access to a car.
- 2.2.8 Despite high overall qualification levels in the city as Figure 2.6 shows there are significant pockets of low and no qualifications. The same areas as identified previously are highlighted as well as additional areas around Dalkeith and Musselburgh.

Figure 2.1: Indicative corridors examined in this study

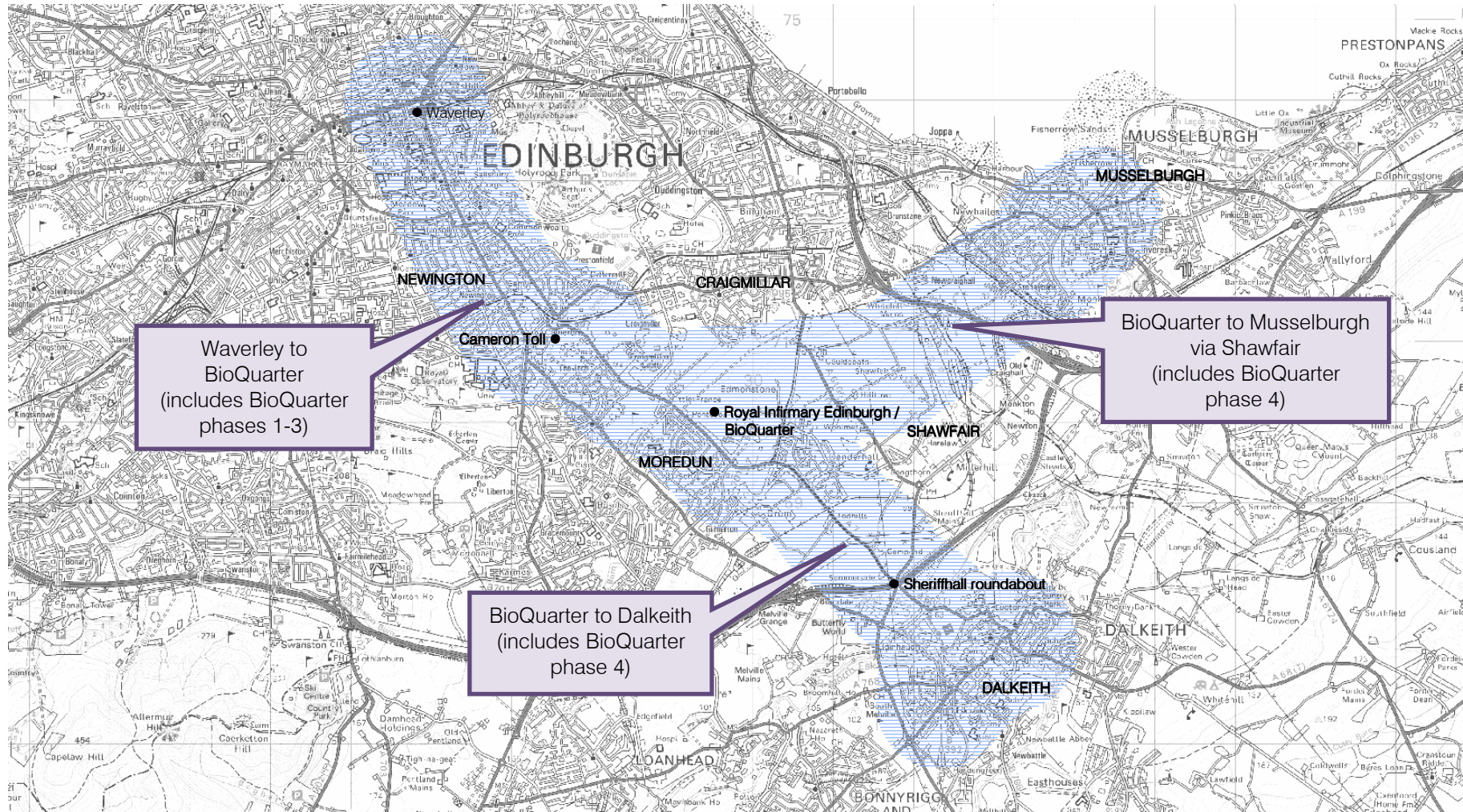


Figure 2.2: The Scottish index of multiple deprivation (percentages based on a national comparison)

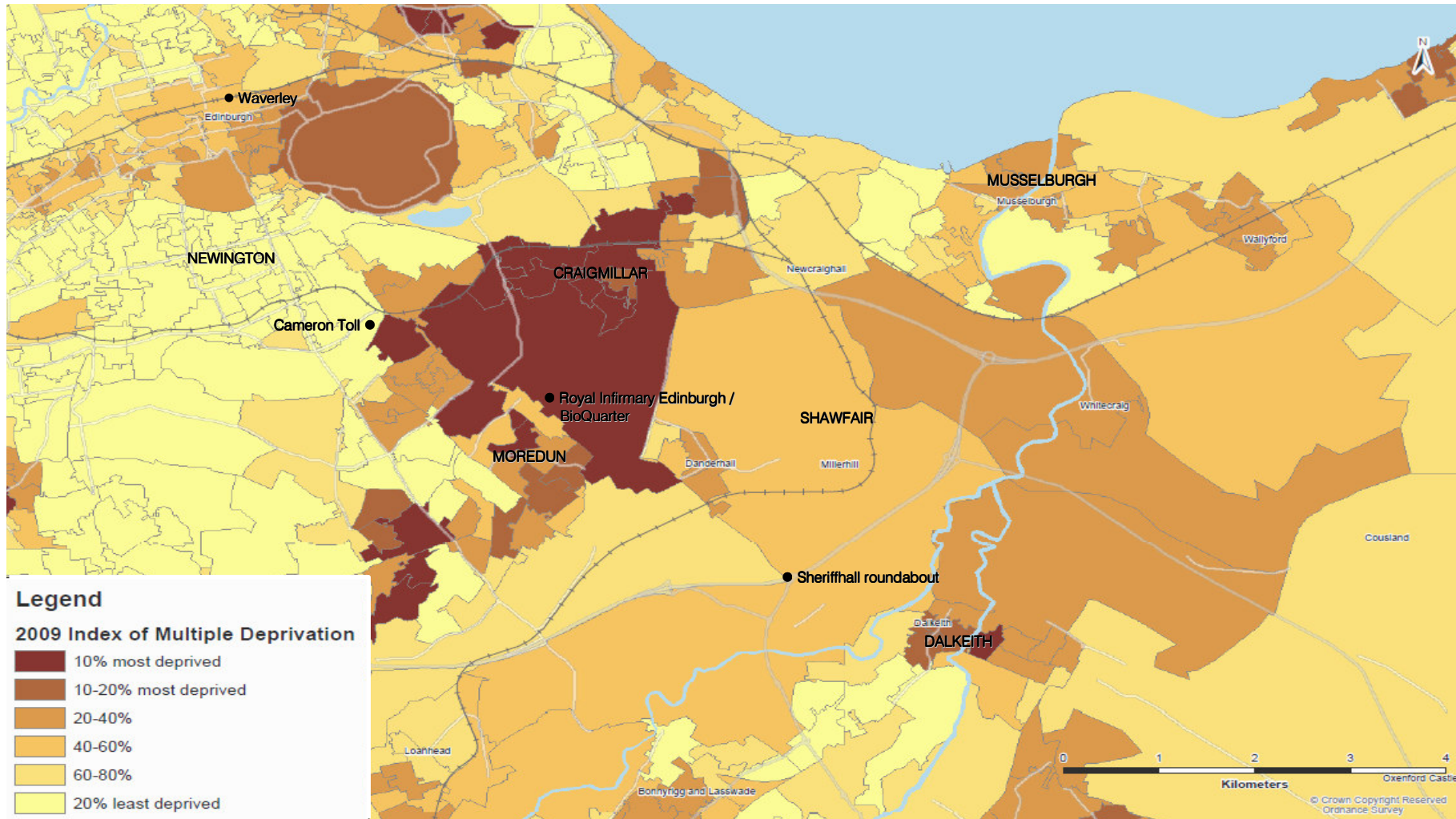


Figure 2.3: The percentage of the population aged 16-74 who are unemployed (based on 2001 census data)

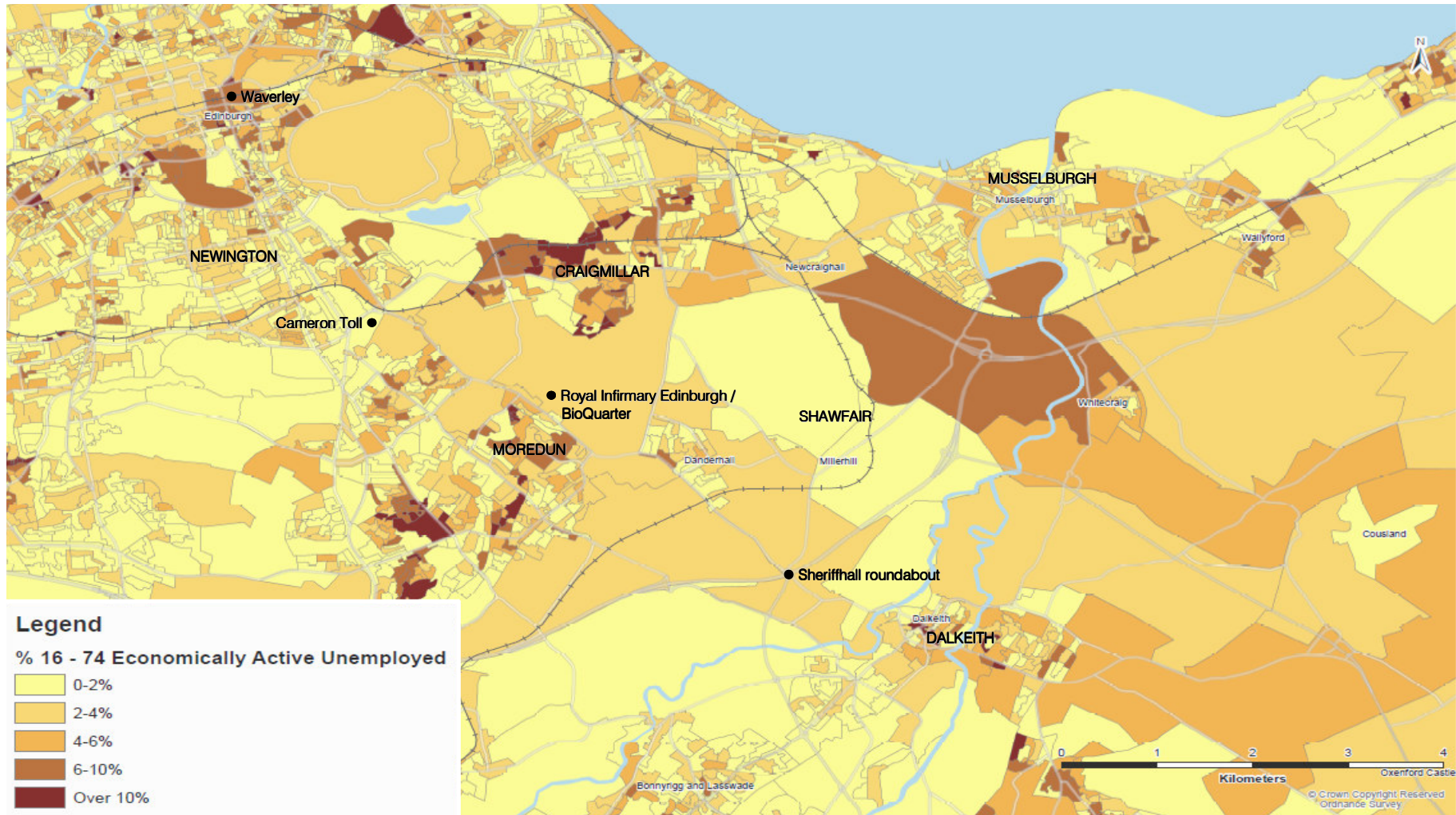


Figure 2.4: The percentage of households which are rented from the council or housing association (based on 2001 census data)

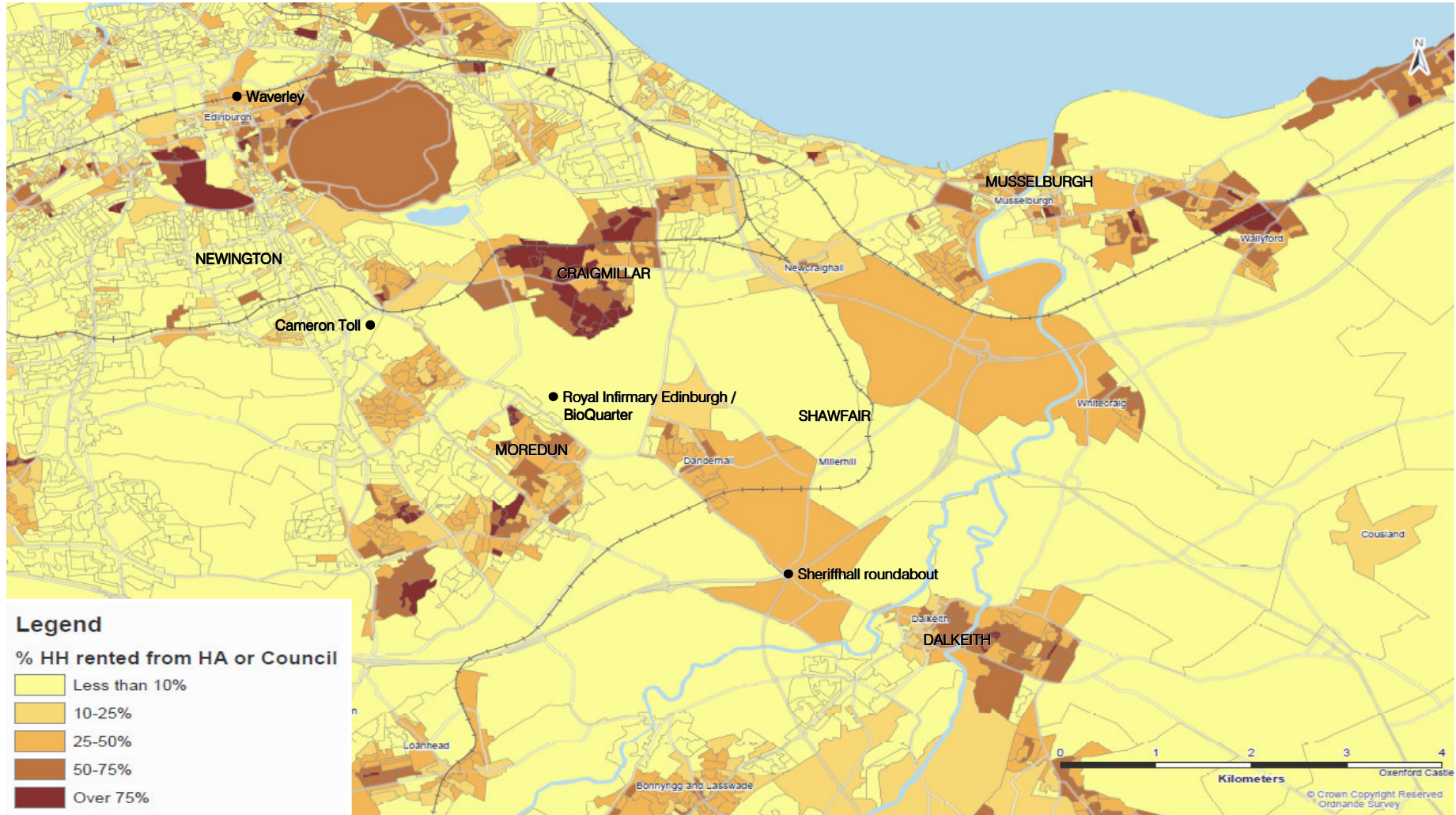


Figure 2.5: The percentage of households without access to a car (based on 2001 census data)

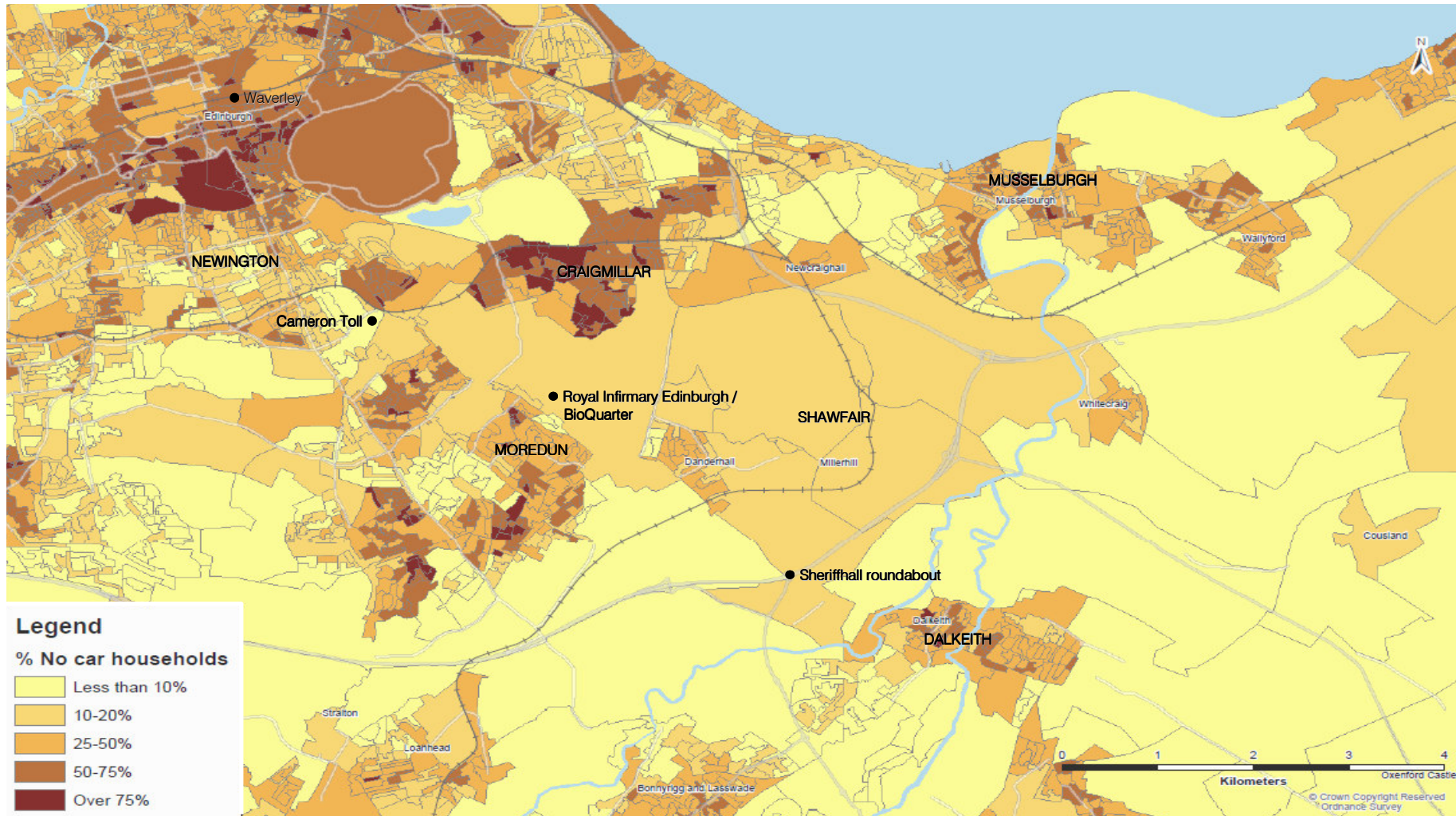
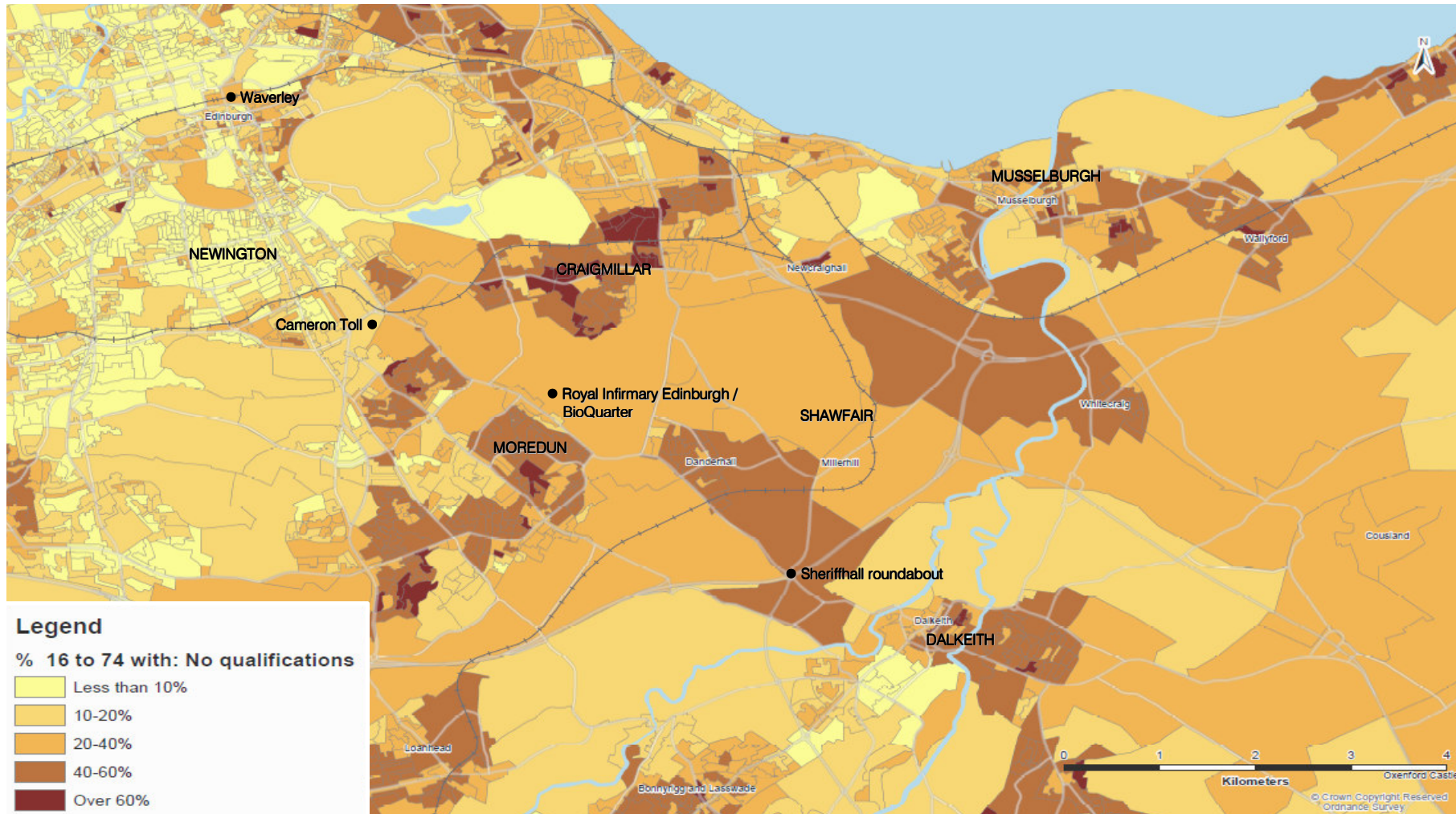


Figure 2.6: The percentage of the population aged 16-74 with no qualifications (based on 2001 census data)



2.3 Waverley to BioQuarter

- 2.3.1 The corridor from Waverley to the BioQuarter has approximately 41,000 people living along it. The population is heavily skewed towards students and young people generally with 28% of residents aged 18-24 compared to just 12% for the city as a whole.
- 2.3.2 The corridor is relatively high density with 70% of the population living in flats compared to 58% for the city. Half the households in the corridor do not have a car compared to fewer than 40% for the city as a whole and are therefore more dependent on public transport to access employment and services. This is reflected in the fact that 45% walk to work (which while good from a sustainability perspective highlights the over dependence on a very localised job market) and further 22% travel by bus.
- 2.3.3 Commuting patterns in the corridor are relatively local. That is, residents take up a high proportion of the jobs available in Southside, Holyrood and Tollcross. They are, however, under-represented in New Town and significantly under-represented in areas such as the western periphery, including the airport, highlighting the access issues to these growth areas.
- 2.3.4 Far more households along the corridor rent their property (23% in social housing, and 21% private rented) than the average for the city which are 16% and 13% respectively. Employment rates are low at 60% compared to 77% for the city, principally due to the large student population in the corridor.

2.4 BioQuarter to Musselburgh via Shawfair

- 2.4.1 Although there are open spaces along this corridor it also serves some high density areas housing over 15,000 people. A quarter of residents along the corridor live in flats or maisonettes and a third in council rented accommodation. It is a relatively deprived area with low employment rates and with a third of householders not owning a car. However, being further out some 58% of people commute to work by car, 22% by bus and 11% walk.
- 2.4.2 A high proportion of people work within the wider corridor into central Edinburgh but as with the main corridor they are under-represented in New Town and beyond. Qualification levels are low with a third of the labour force having no qualifications. There is a high proportion of families with 21% of the population aged under eighteen. 19% are aged over 65.

2.5 BioQuarter to Dalkeith

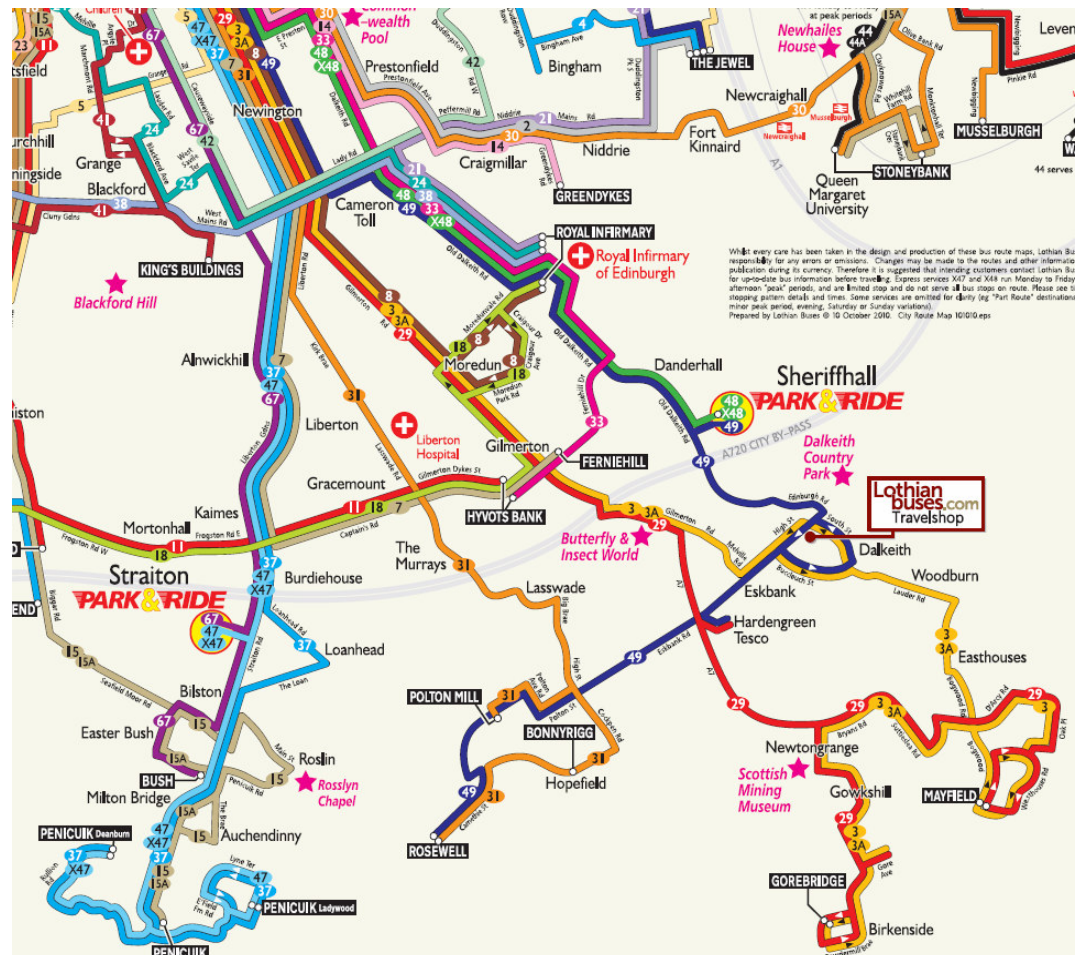
- 2.5.1 This is a lower density and more prosperous corridor serving around 20,000 people. Some 70% of residents own their property with just 20% renting from the council. Around 85% of the properties are houses or bungalows rather than flats and car ownership is higher with 40% of households owning two cars or more and less than a fifth not having a car.
- 2.5.2 Over 60% commute to work by car but over a quarter still travels by bus. Commuting patterns are more diverse but again there is a considerable take up of jobs along the wider corridor. Qualifications are still low with 38% having no qualifications and just 16% have qualifications at NVQ4+ level.

2.6 Assessment of current public transport links

- 2.6.1 South east Edinburgh is well served by high frequency radial links from the City Centre to both Dalkeith and Musselburgh, although opportunities to travel orbitally between the corridors are limited unless a journey interchanging in the City Centre is made. There are large volumes of buses using the 'Bridges' corridor and this can cause delays due to congestion and the requirement to queue to access bus stops.

2.6.2 The BioQuarter development is served by around 60 buses an hour which provide journey opportunities from a variety of destinations (most of which pass through the City Centre.) An extract of the Lothian Buses route map is provided in Figure 2.7.

Figure 2.7: Lothian bus network within south east Edinburgh (source Lothian Buses)



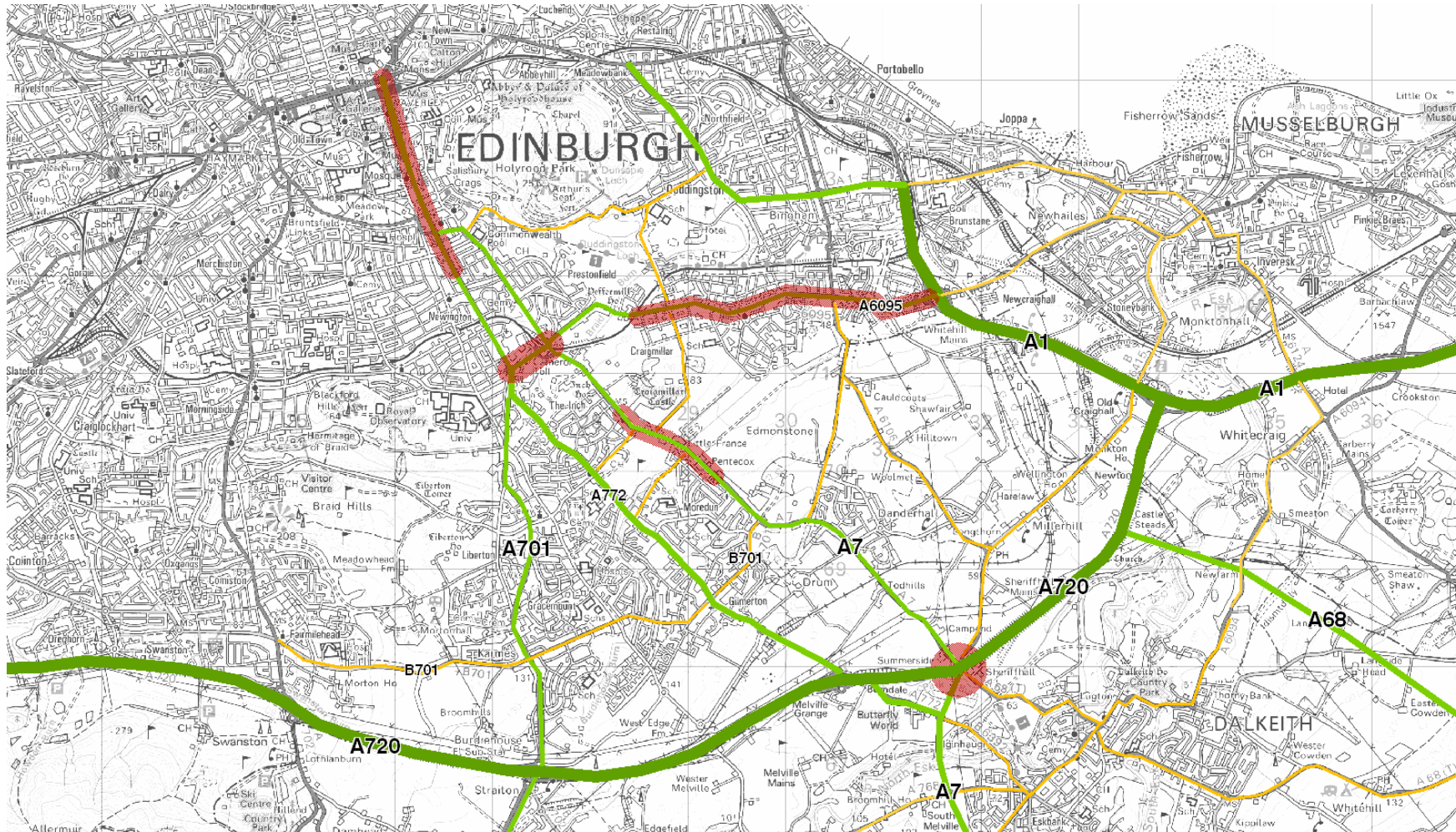
2.7 Private transport assessment

2.7.1 Access to the south east of Edinburgh from the city centre is along the 'Bridges' route, which is a major public transport route, along which a significant number of buses run relatively frequently. A dedicated bus lane runs along the majority of the route but the relatively large number of buses servicing the corridor can cause delays for the flow of general traffic.

2.7.2 Towards the BioQuarter, access is along the Old Dalkeith Road which suffers from congestion during peak periods. From the city centre, the road is accessed via the Cameron Toll roundabout and from the south it is accessed via the Sheriffhall Roundabout – both identified as being 'pinch points' in the road network.

2.7.3 Access from the east and west is generally via the City Bypass, and again via the Sheriffhall Roundabout. Significant delays occur in the peak periods along the Bypass, leading to significant variations in journey time during the day.

Figure 2.8: Major roads in the study area (with congestion hot spot locations shown in red)



3 Policy assessment

3.1 Introduction

3.1.1 This chapter provides an overview of some of the key policy documents pertaining to south east Edinburgh. It should be noted that since the documents have been produced, a number of the developments will have been constructed / put on hold and a number of assumptions will have changed. The sections below present the information as it is set out in each of the documents and does not seek to comment on the current status of any of the schemes. The documents reviewed to provide a basis for this study are:-

- SESplan Area Strategic Development Plan
- Edinburgh & the Lothians Structure Plan 2015
- Edinburgh City Local Plan (proposed for adoption in 2009)
- Midlothian Local Plan 2008
- East Lothian Local Plan 2008

3.1.2 A detailed review of the documents was undertaken and is provided in Appendix 1, while the key points from each of the documents are summarised below.

3.2 SESplan Area Strategic Development Plan

Prepared by: SESplan in conjunction with City of Edinburgh Council, East Lothian, Midlothian, Fife, Scottish Borders and West Lothian Councils

Introduction

3.2.2 SESplan has been established to prepare and maintain an up to date Strategic Development Plan (SDP) for the Edinburgh and South East Scotland area. Work on the SDP is to commence shortly and when completed will replace the existing Edinburgh and Lothians Structure Plan, the Fife Structure Plan and the Scottish Borders Structure Plan. In addition, the individual councils will have to prepare Local Development Plans in order to implement the requirements of the new SDP.

3.2.3 This plan will cover an area of population of 1.2 million - 521,000 households (2006) - and is expected to grow by 12.5% from 2004-24 compared with less than 1% for Scotland as a whole (source SESplan). The plan will cover the period from 2012 to 2032.

Main issues report

3.2.4 The latest stage of the SDP process to be completed is the completion of the Main Issues Report (MIR) which has recently been out for consultation. Its purpose is to set out the context and challenges facing the SESplan area around the key topics of economy, population and housing, transport and infrastructure, environment, resources and climate change.

3.2.5 The main priorities for the SDP are to:-

- continue delivery of development areas identified in existing Structure Plans
- link the development strategy to the availability and provision of supporting infrastructure
- provide additional land to allow sustainable economic development, and to
- promote a sustainable pattern of development.

Economic development

- 3.2.6 South east Edinburgh is identified in the report as being one of eight strategic growth areas in the Development Plan area. It is a key area for the development of growth in the Life Sciences sector and as a strategic employment location, providing business and industrial opportunities in association with the Shawfair new settlement and the north Midlothian towns (around the A7/A68), in support of the proposed strategic growth area. The BioQuarter is also recognised as a strategic economic growth point.

Transport and infrastructure

- 3.2.7 The report acknowledges that south east Edinburgh is served by the Edinburgh City Bypass and Sheriffhall Roundabout which are operating close to capacity and are severely congested at peak times and that Transport Scotland has also raised concerns with regard to the capacity of the Old Craighall Junction.
- 3.2.8 Key infrastructure improvements identified in the MIR which are likely to impact on the South East of Edinburgh area are:-
- Development of tram lines
 - Orbital bus route
 - Upgrading of Sheriffhall Roundabout (grade separation)
 - Re-opening of Borders Railway
 - Improvements to A701
 - Upgrading of junctions on the A720 City Bypass (including Sheriffhall)
 - A7 junction improvements
 - Upgrades to A1
 - Strategic Park and Ride

3.3 Edinburgh & the Lothians Structure Plan 2015

Prepared by: City of Edinburgh, East Lothian, Midlothian and West Lothian Councils

Introduction

- 3.3.2 The Edinburgh & Lothian Structure Plan (ELSP) provides a long term planning vision for development and the environment in Edinburgh and the Lothians until the year 2015.
- 3.3.3 The overarching aim of the ELSP is to provide in full for the development needs of Edinburgh and the Lothians in accordance with the principle of sustainable development, whilst maintaining and enhancing the environmental heritage that underpins the area's quality of life.

Core development areas

- 3.3.4 One of the main core development areas identified is the South East Wedge. Development of this area is considered to be an integral part of the planning strategy for the Lothians. Two key corridors related to this study are mentioned which cover the areas towards Midlothian and the Borders Railway corridor.
- 3.3.5 In Midlothian, the two main transport corridors (A7/A68 and A701) are identified as core development areas on the basis of their potential for enhanced accessibility with investment in transport proposals, and for employment growth, particularly in the biotechnology sector, to reduce reliance on out-commuting for work purposes.

- 3.3.6 The A7/A68/Borders Railway corridor comprises the communities of Dalkeith, Mayfield, Newtongrange, Gorebridge and Rosewell. The Structure Plan notes that the accessibility of this area would be considerably enhanced by the implementation of road and rail proposals including the re-opening of the Borders Railway and the grade separation of the Sheriffhall roundabout.
- 3.3.7 The A701 corridor is defined as extending from Straiton to Penicuik and including the communities of Loanhead/Straiton, Bilston, Roslin, Auchendinny and Penicuik. It is accepted that improvements to the A701 and the re-opening of the Penicuik rail line or a south Edinburgh tram extension would enhance access to this area.

Economic development

- 3.3.8 The Lothian Structure Plan 1994 recognised the need for sites devoted to the new bio-medical and related research industries. Attracted to Edinburgh and the Lothians by the concentrations of university and research institute-based 'clusters' and the academic and research strengths of the area in general, these new generation industries are leaders in the areas of genetics, animal health and welfare and the commercialisation of bio-medical research. More recently, Scottish Ministers have confirmed that the development of the Scottish Biotechnology Cluster is of strategic importance to the Scottish economy.
- 3.3.9 The key locations for development associated with these economic clusters of national significance are along the A701 corridor (especially around established uses in the Bush Estate/Roslin Institute area), and in the South East Wedge around the new Edinburgh Royal Infirmary. Both locations have the potential for enhanced accessibility by public transport and development sites are required and identified to support the clusters, whether as new sites or as extensions to established sites.
- 3.3.10 The out of town shopping centre at Newcraighall/The Jewel/Fort Kinnaird is identified within the Structure Plan as a major shopping centre of strategic importance.

3.4 Edinburgh City Local Plan

Prepared by: City of Edinburgh Council

Introduction

- 3.4.2 The Edinburgh City Local Plan sets out the Council's policies to guide development in the city and its proposals for specific sites. The Plan covers the whole of the urban area, and part of its rural, green belt fringe.
- 3.4.3 The Local Plan has been prepared within the wider, strategic framework set by the Edinburgh and the Lothians Structure Plan 2015 for the City of Edinburgh Council area and that of the three Lothian councils.
- 3.4.4 The Local plan has the same end date in view, i.e. 2015. Its purpose is to:
- provide a clear basis for determining planning applications;
 - allocate land to meet needs and targets set out in the Structure Plan;
 - provide a clear framework for regeneration strategies prepared by the Council, other public sector agencies and developers; and
 - provide support for wider strategies of the Council, particularly the Local Transport Strategy, and help infrastructure providers to plan for the future.

Spatial strategy - South East Wedge / Edinburgh BioQuarter

- 3.4.5 The agreed City of Edinburgh/Midlothian strategy for the South East Wedge includes the development of a centre for bio-medical research on land south and east of the new Royal Infirmary, together with housing south and east of Greendykes. A key part of the strategy is the establishment of a landscape framework and public open spaces around the new growth areas. This local plan confirms the allocations and safeguards an extended area of land to allow for future expansion of the 'BioQuarter' with further inter-related hospital, university and commercial business development expected to be of national significance.

Economic development

- 3.4.6 Policies in the ECLP aim to ensure that the local economy develops sustainably within an overall framework that emphasises the importance of realising the city's growth potential while protecting its environmental qualities. It is noted that Edinburgh functions as the core of a wider economy and job market.
- 3.4.7 Policy EMP2 relates directly to the Centre for Bio-medical Research and stipulates that proposals supportive to the development of a high quality centre for bio-medical research and its commercialisation within the allocated area at Little France will be permitted. This is provided that they comply with the design and use requirements of an approved master plan which provides broadly for an inter-linked mix of medical education and research, directly related commercial activity and appropriate ancillary and support services.

Transport

- 3.4.8 The tram is identified as having the ability to address the transport impacts of future development over a wide area, including the critical growth areas of the city, in the longer term, which includes the South East Wedge. The disused railway line between Danderhall and the City Bypass at Straiton in the local plan area has the potential to form part of an orbital busway and is therefore identified on the Proposals Map. The Council is also seeking development-led improvements, in the form of a Greendykes/Royal Infirmary bus only link road, and a similar link between Newcraighall and Queen Margaret University College in East Lothian.

3.5 Midlothian Local Plan 2008

Prepared by: Midlothian Council

Introduction

- 3.5.2 The Midlothian Local Plan is the key document setting out the detailed framework for the future use of land in the Midlothian Council area and conforms with the policies set out in the approved ELSP 2015, allocates sites for new development, identifies areas which need to be protected from development and sets out detailed policies which will be used in determining planning applications.
- 3.5.3 The Local plan provides a clear framework for development over five years, and was adopted by the Council in December 2008 as its statement of policies and proposals for the whole of Midlothian.

Economic development

- 3.5.4 Midlothian Council and Scottish Enterprise are implementing a joint strategy for jobs and opportunities for the people of Midlothian. The strategy emphasises that land releases will be essential to service employment growth in North Midlothian. Key opportunities identified include:
- Biotechnology – development of the biotechnology cluster around the Bush Estate and Roslin Institute has provided Midlothian with the opportunity to reverse the long term drift of jobs out of the area.
 - A720 Corridor – North Midlothian and the Shawfair area represent a zone of opportunity. With the right planning framework and careful stewardship of the environment the area close to the A720 City Bypass can accommodate significant numbers of jobs in the next decade.
 - Tourism – there is an opportunity to develop Midlothian’s tourism and leisure industries, with a particular need to supplement the provision of tourist accommodation.
 - Local centres – there is a need to encourage the revival of Midlothian’s towns.
- 3.5.5 Within the A7/A68/Borders Railway corridor, as well as providing a spread of sites, economic land allocations have been made within the Local Plan to enable the establishment of flagship development sites close to Sheriffhall. This is one of the key gateways into Midlothian and offers the prospect of establishing high quality business parks, adjacent to the A720 City Bypass.

Transport

- 3.5.6 Midlothian Council supports the early implementation of the planned Borders Railway (Edinburgh – Tweedbank) and related infrastructure, including stations and associated car parks at Shawfair, Eskbank, Newtongrange and Gorebridge. The Council also supports the A720 Sheriffhall Junction Grade Separation and the extension of the Sheriffhall and Lothianburn Park and Rides.

3.6 East Lothian Local Plan 2008

Prepared by: [East Lothian Council](#)

Introduction

- 3.6.2 The East Lothian Local Plan 2008 is the adopted local plan for the whole of East Lothian. It explains and justifies the Council’s approach to the development and use of land and buildings within east Lothian. Together with the Edinburgh and the Lothians Structure Plan 2015 it forms the statutory development plan for East Lothian.
- 3.6.3 The Local Plan’s policies and proposals are intended to give firm guidance over a period of at least five years following its adoption. The plan’s housing and employment land allocations address the requirements of the Edinburgh and the Lothian Structure Plan 2015 over the period to 2015.

Transport

- 3.6.4 The East Lothian Local Plan references Edinburgh tram line 3, with respect to how the line could be extended to serve Queen Margaret University College’s new campus, Musselburgh station and Musselburgh town centre.

4 Review of transport proposals

4.1 Review of transport proposals

4.1.1

There have been long standing aspirations for a radical improvement in public transport provision to and from south east Edinburgh. These previously culminated in the development of a proposal for a new tram line (“Tram Line 3”), which would connect with the “Phase 1a” tram line currently being constructed between the Airport and Leith via Waverley. This scheme was put on hold prior to the Parliamentary Approval process, but a number of documents relating to the study were in the process of being prepared when this occurred. A review of the documents has been undertaken and full details are provided in Appendix 2. Figure 4.1 shows the tram network envisaged more recently, including Phase 1a, which is currently under construction. Figure 4.2 shows the previously preferred route for “Tram Line 3”, extracted from the Draft STAG Report of 30 November 2004.

Figure 4.1: Edinburgh Tram Phase 1a plus proposed future Phases.

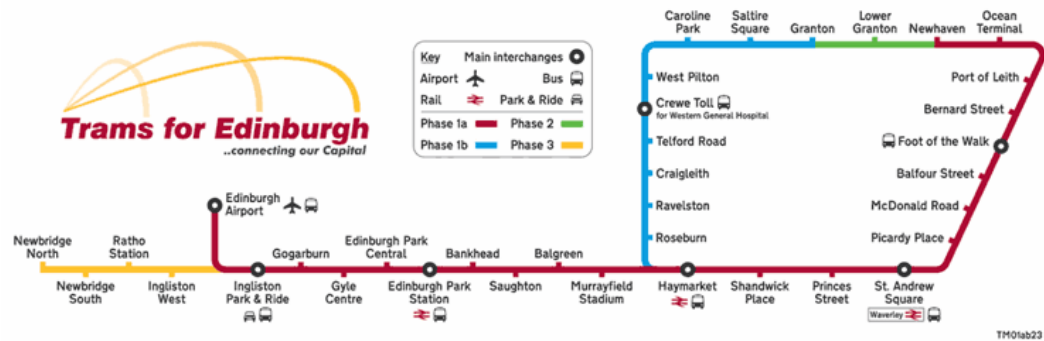
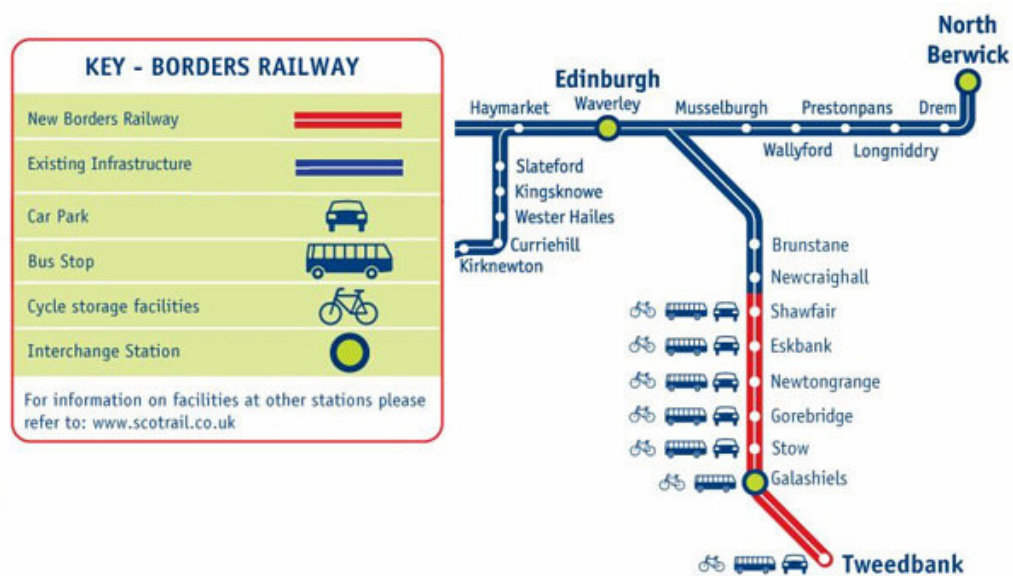


Figure 4.2: Preferred Route for “Tram Line 3” extracted from Draft STAG Report



- 4.1.2 For this Economic Potential Study, various high level options were considered with the core route operating from Edinburgh Waverley to Cameron Toll and then on to the Royal Infirmary and the BioQuarter. It was then concluded that greater economic and development potential was available if the analysis considered the area beyond the BioQuarter towards either Dalkeith or Musselburgh.
- 4.1.3 The analysis in this report is not dependent on a particular form of public transport improvement. That is, it could be a new tram but equally it could be a guided bus or bus rapid transit. Rather than the physical form that the service takes the analysis is based on the impact that such an improvement will have on accessibility and perception of the areas served, and in the future may provide capacity not possible through continued development of existing modes.
- 4.1.4 Using existing transport models an estimate of the potential change in accessibility resulting from transport improvements has been calculated for illustrative purposes. Full details of the work undertaken are set out in Appendix 3.
- 4.1.5 It has been identified that although the planned Borders Railway passes through south east Edinburgh, there are no committed projects to link the local area into the proposed stations. The Borders Railway is a planned reinstatement of the heavy rail line from Edinburgh Waverley to Tweedbank in the Borders with new or reinstated stations at Galashiels, Stow, Gorebridge, Newtongrange, Eskbank and Shawfair (see Figure 4.3). Passenger services would operate via Newcraighall and the planned new Shawfair station is located east of Danderhall.

Figure 4.3: Borders railway stations



- 4.1.6 Linking major transport improvement into these stations would allow people using the planned Borders Railway to access destinations in south east Edinburgh (such as the BioQuarter), shortening their journey by avoiding the need to travel into Edinburgh City Centre and out again. Linking into the station at Shawfair or Eskbank would allow better interchange, increasing the population catchment of south east Edinburgh.
- 4.1.7 The level of improvement in accessibility is substantial; for example, the number of potential employees who can access the BioQuarter within 30 minutes could increase by 27% with a

step change in transport links only within the Waverley to BioQuarter corridor (i.e to the City Centre) and by 36% if a link is also established to the planned Borders Railway at Shawfair and onwards to Musselburgh (average commute times are around 25 minutes in the region).

- 4.1.8 To put this into context, at present the BioQuarter can access a third of the potential labour force that an organisation in central Edinburgh can access within 30 minutes and three-quarters that can be accessed in 45 minutes. These figures are increased by twelve and five percentage points respectively if the transport improvement is extended to Musselburgh (connecting to the Borders Railway at Shawfair) or Dalkeith (connecting at Eskbank). This increase would be even higher with the development of potential housing in the corridor.
- 4.1.9 It should be noted that this increase in accessibility does not fully capture the population who would have their accessibility improved by the direct connection from the south east of Edinburgh to the planned Borders Railway. Increased population catchments are limited to within 400 metres of the station and no additional allowance is made for those who would access the station from outside that area e.g. to Park and Ride. Without construction of a rail station catchment model for each of the stations in the area, it is not possible to fully quantify the increased population, other than to say it is being underestimated.
- 4.1.10 The drive time catchment for Galashiels Station was calculated using average AM Peak road speed data from the ITIS GPS dataset to give an accurate idea of AM peak travel time to the station. This calculated that a total of 15,000 people are within a 10 minute drive and 32,000 people are within a 20 minute drive of the station in the AM peak. It is not possible without undertaking detailed analysis to calculate how many of these people would use the Borders Railway and would then go on to access the south east Edinburgh area. It can however be seen that the numbers living within the catchment of the Borders Railway are significant, and this only takes into consideration Galashiels Station.
- 4.1.11 It is this change in accessibility as well as improvements to the perception of the area with investors and occupiers that it is considered might lead to the attraction of new economic activity along the corridor. That potential is the subject of this study.

5 Overview of consultation and case studies

5.1 Introduction to consultation

- 5.1.1 This section of the report provides a summary on the Stakeholder Consultation that was undertaken as part of the project. As well as the main consultation, undertaken using a series of focus groups spread over the first and second phases of the work, there was also a business survey, and additional focus groups undertaken with economically inactive residents within the South East Edinburgh area, which are covered in the social inclusion section
- 5.1.2 The details of the main stakeholder consultation are fully documented in the ' Final Stakeholder Consultation Report' submitted in conjunction with this final report. The report documents the stakeholder consultation which was undertaken over two phases. Consultees involved were representatives from East Lothian, Midlothian, Scottish Borders and City of Edinburgh Councils as well as the key parties involved in the BioQuarter development, the Edinburgh Chamber of Commerce, SEStran and SESplan.
- 5.1.3 Separate sessions were held with each of the groups of stakeholders to ensure that each group was able to provide opinions and views in an unbiased environment, reducing the risk that conflicts between views would bias the outcome.
- 5.1.4 The complete topic list covered the following areas:-
- Employment and development
 - Social inclusion and regeneration
 - Investment and growth
 - Access for staff / students / visitors and employer access to labour markets
 - Transport – public and private
- 5.1.5 The key findings and common themes that from the sessions are set out below.
- Development, employment, investment and growth**
- 5.1.6 Key strengths were agreed to be the road links to the south and east e.g. the A1 and A68, and in the majority of discussions it was agreed that the BioQuarter and Shawfair developments in this area were strengths due to their reputation and in providing a focal point for the area.
- 5.1.7 Key weaknesses identified were planning restraints related to the Green Belt, highway network congestion particularly on the City Bypass and the provision of orbital public transport links in the area, for example, from the south to the west of the city, without having to go into the city centre. Links to the north and west as well as to the airport were perceived to be poor, which may deter certain types of development and investment. Journey time unreliability for both public and private transport was cited as a weakness.
- 5.1.8 Opportunities identified that were common to all discussions were limited to good land availability in the area and the potential to improve transport links.
- 5.1.9 A commonly perceived barrier and threat to development, employment, investment and growth was seen to be conflicts and differing priorities between agencies e.g. local, regional and national agencies, different Councils and potentially the different functions of Councils. The lack of public transport connectivity combined with the City of Edinburgh Council parking standards were thought to be a future threat, as were specific pinch points in the road network e.g. Sheriffhall.

- 5.1.10 A final barrier that was identified was the issue that Green Belt and other planning policies had to be defined up to 20 years into the future when funding streams were not certain even up to five years in the future.

Social inclusion and regeneration

- 5.1.11 Strengths with respect to social inclusion and regeneration were highlighted to be areas which had started to undergo regeneration such as Craigmillar and Prestonpans which are also currently priority areas. Road access to these areas was also perceived to be a strength.
- 5.1.12 Weaknesses were highlighted as being non-car access modes such as public transport, walking and cycling, particularly from Craigmillar and areas within Midlothian to the BioQuarter site and direct orbital public transport services, for example between Dalkeith and Musselburgh rather than radial access that requires a change of bus in the city centre. These orbital routes may provide increased accessibility to employment opportunities for currently excluded areas.
- 5.1.13 The proposed tram line was seen as an opportunity to improve public transport provision in the area in a number of the focus groups, as well as introducing other schemes such as the orbital bus route proposed by SEStran. The introduction of the planned Borders Railway was also identified as an opportunity to develop tourism and improve the access to employment and education for some groups currently excluded due to lack of public transport provision.
- 5.1.14 The barriers and threats to improving social inclusion and regeneration in the area were perceived to be the resources required to produce major improvements in these areas and planning issues around housing and employment allocations and Green Belt restrictions.

Issues specific to the BioQuarter / hospital site

- 5.1.15 Strengths specific to this site were perceived to be the reputation of the BioQuarter in drawing in other development and investment to the area. The location of the site was also considered to be a strength – near enough to the city centre to allow good public transport access, yet far enough out to have better parking provision than if it was located in the city centre.
- 5.1.16 Road access was seen as being a significant weakness of the site, particularly Sheriffhall, Cameron Toll, the Old Dalkeith Road and the City Bypass at peak periods. The congested road network not only impacts on car users, but causes delays and journey time unreliability for service and public transport vehicles. Cycle and walking access was also perceived to be a weakness as was the lack of 'supporting' facilities in the area such as retail and leisure.
- 5.1.17 Opportunities for the area were perceived to be the fact that much of the site was still undeveloped which could potentially allow some of this land to be used for retail, leisure or transport development. The potential for introducing a tram to the area was also seen to provide a significant opportunity to improve the perception of public transport access at the site and to attract existing car users onto public transport.
- 5.1.18 Threats to the site were seen to be the perception of (rather than the actual) public transport provision, the current car dependence at the site, and the fact that, until a 'critical mass' is achieved at the site, development of ancillary facilities is likely to be slow. Despite the availability of land, it was considered a threat that land which might obtain high value for bio-medical uses may have to be utilised to provide car parking or supporting facilities such as retail and leisure.

Transport

- 5.1.19 It was agreed in all groups that regional highway links and highway connections to the south along the A1 were strengths for this area. Radial public transport links to and from the city centre out to Musselburgh, Dalkeith and the Scottish Borders along the key routes were also seen as a strength. Existing rail links to Musselburgh and the planned Borders Railway which will provide direct access to the Borders from Newcraighall and Shawfair was also identified as a key asset.
- 5.1.20 The weaknesses highlighted focussed on the available capacity on the road network, especially in future if private transport usage continues to increase. Key 'pinch points' in the area were identified as the City Bypass, Old Dalkeith Road, Sheriffhall roundabout and Cameron Toll and these contributed significantly to the perception of journey time unreliability in the area.
- 5.1.21 It was identified that the lack of orbital public transport routes linking for example Dalkeith and Musselburgh, or destinations in the south of the city with destinations in the west of the city without interchanging in the city centre, reduced the perception of public transport accessibility in the area.
- 5.1.22 The general perception of public transport and parking availability in the area was also highlighted as a key weakness. Despite the fact that there are a large number and high frequency of existing public transport services and parking provision, for example at the BioQuarter, it is not *perceived* that this is the case. This could reflect a lack of knowledge about public transport availability.
- 5.1.23 It was anticipated that these current weaknesses in existing infrastructure and service provision could deter developers and investors who may perceive that they will face the bill to improve accessibility in the area.
- 5.1.24 It was proposed that some of the schemes currently under development including the SEStran orbital bus scheme, real time information project and journey planning initiatives provided opportunities for transport in the area.
- 5.1.25 The topic of a proposed tram route in the area dominated a number of the discussions. It was felt that a tram would raise the status of the area to be more on a par with the west of Edinburgh which is competing for investment but already has a committed tram line. It was considered that the fixed link element of the tram would improve the perception of public transport and the journey time reliability in the area, and could attract existing car users to public transport.
- 5.1.26 If the line was to link into the existing tram line currently under construction it would improve transport links to the west and public transport access to the airport. It was also suggested that there would be benefits in linking any future tram line into one of the planned Borders Railway stations e.g. at Shawfair or Eskbank to link south east Edinburgh directly with the population catchment and workforce in the Borders.
- 5.1.27 The key threats to recognising the economic potential of the area were identified as being lack of funding to improve the infrastructure and the perception of accessibility in the area. There was a perception that if the infrastructure were not in place prior to development occurring, that not only would it deter developers and investors and give them the expectation that they would be required to make large financial contributions; but that travel habits would be formed that would reinforce the car dependency in the area.
- 5.1.28 Other threats included the conflicting agendas and priorities of different agencies in the area, which may also impact on the funding the area receives.

Main stakeholder consultation – planner / agent / developer interviews

- 5.1.29 The contributors to this section of the consultation were on the whole more negative about the current perception of the South East Edinburgh area, particularly when compared with other areas in Edinburgh. The lack of existing infrastructure and existing developments made it compare poorly with areas such as West Edinburgh and Leith.
- 5.1.30 This area, while proposed as a major development area, was the only area not to have major committed transport infrastructure e.g. a tram line. It was considered that the poorly perceived road and public transport access was reducing the likelihood that businesses would locate and invest in this area.
- 5.1.31 Although it was agreed that the BioQuarter provided a focus for development in the area, it was felt that the focus on Life Science development may deter other business types from locating here, and the BioQuarter development in itself would not be enough to kick-start development in the area.

Conclusions of main stakeholder consultation

- 5.1.32 The conclusion of the stakeholder consultation was that transport of all forms was consistently considered to be a barrier to recognising the full economic potential of the area.
- 5.1.33 Both the stakeholder consultation sessions and the agent interviews have cited transport links, and public transport links in particular as a weakness and a threat to the south east Edinburgh area. The possibility of providing additional services and new types of services would therefore appear to be the key to unlocking the potential of the area.
- 5.1.34 Although highway links in the area are perceived to be strong, a number of specific weaknesses were identified, including congestion on the City Bypass causing journey time unreliability and Sheriffhall junction being a pinch-point in the road network.
- 5.1.35 The planned Borders Railway has been identified as an important link to the south east of Edinburgh. It would provide a direct link into the area with stations at Eskbank, Shawfair and Newcraighall and would allow a larger number of passengers to avoid the need to travel into the city centre and back out again in order to access the area. Providing good connections from these new rail stations to the rest of the area was identified as an opportunity to expand the potential workforce of the area by increasing the size of the 'catchment' with a realistic commuting time.
- 5.1.36 It was felt that the perception of public transport links in the area was considered to be poor, even if in some instances this wasn't actually the case in reality. Schemes currently ongoing in the area to improve public transport information, including real time displays at stops, phone bus tracking applications and journey planning websites and initiatives promoted by SEStran should assist in changing the perception and the knowledge of the population about public transport services in the area.
- 5.1.37 It has also been highlighted in many instances that the introduction of a tram route or fixed link in this area could assist in overcoming many of the issues, some of which it would not be possible to overcome in the same way with the introduction of new bus services.
- 5.1.38 This fixed link, potentially connecting into the planned Borders Railway at Newcraighall, Shawfair or Eskbank could potentially increase the benefits of both schemes and in general the public are more aware of fixed link services, than of bus routes, which are perceived (often incorrectly) of having less certainty.
- 5.1.39 Provision of good transport links into one or more of the new Borders Railway stations, potentially with a fixed link such as a tram, was seen as one of the options with the greatest

potential for opening up the south east Edinburgh area. If a tram did link this area to the airport, this would provide improved access, currently perceived by some groups as a weakness of this area.

5.1.40 It is also apparent from the consultation process that there is concern, particularly among the local authorities, that development within the south east of Edinburgh will have impacts outside the City of Edinburgh. Concerns expressed included the possibility that development in this area could reduce the likelihood of development in neighbouring authorities and that pressure on housing provision and transport services may increase as a result of this development.

5.1.41 As plans for south east Edinburgh emerge, it will be important to keep neighbouring authorities informed and involved in the process as well as the regional bodies such as SESplan and SEStran who represent the whole area.

5.2 Focus group with economically inactive residents sample group

5.2.1 A focus group was held with unemployed or economically inactive residents in south east Edinburgh to discuss to what extent transport is a barrier to the take up of employment and other opportunities.

5.2.2 The purpose of the focus group was to explore the hypothesis that a high quality public transport system results in raised travel horizons for socially deprived groups.

5.2.3 Key questions incorporated into the discussion, in order to test this hypothesis were as follows:

- Will people travel to where their local bus takes them but not interchange?
- How far are people prepared to travel for employment, leisure and shopping?
- How would people travel to key locations in Edinburgh and how long do they think the journey would take them?
- How long are people prepared to travel (in minutes) to take up employment or go shopping?
- If people had to go somewhere they didn't know, how would they find out how to get there?

5.2.4 It was originally proposed to recruit most participants via JobCentre Plus which has been used successfully for similar purposes on previous occasions. However, the local office advised that due to benefit rules there was no advantage in claimants taking part in such an exercise as incentives paid to participate would be deducted from their benefit.

5.2.5 As an alternative, contact was established with the Liberton and Gilmerton Neighbourhood Partnership (LGNP) to recruit focus group members. The session, based on the topic list, was to last approximately one hour and 45 minutes, this allows for approximately ten minutes for the facilitator and attendees to introduce themselves and to talk briefly about the format of the sessions. Topics included were:

- Travel choices;
- Public transport interchanging;
- Journey durations;
- Public transport reliability;
- Journey duration versus wage level; and,
- Finding out how to get there.

5.2.6 The key output of the group was that public transport provision in the study area is good, with regular buses and good reliability. In line with previous research on travel horizons and

socially excluded groups referenced in Section 8, time poverty and financial issues were highlighted as the main factors impacting on travel horizons. However, the city's comprehensive and stable bus network meant that other factors such as information and interchange were not the barriers they were in other cities.

5.2.7 Radical improvements in public transport would have some benefits in terms of extending the areas that people would travel to obtain employment but most locations that the group would consider are already well served.

5.2.8 Full details of the session are provided in Appendix 4

5.3 Online business survey

5.3.1 In order to understand the transport priorities of businesses in the south east of Edinburgh, an online survey was prepared. A series of ten questions was prepared and agreed with the client group. Requests to participate in the survey were issued as part of a monthly email released by the Edinburgh Chamber of Commerce. Unfortunately, the response rate to the survey was low but, although the results may not be statistically robust they still provide some useful pointers to transport issues affecting businesses. (Full details of the survey are contained in Appendix 5)

5.3.2 An important issue affecting Edinburgh's ability to attract business is the perception that there is a limited labour market. The south east of the city is further from a number of major commuter areas and this may impact on businesses' ability to attract and retain staff. Although the majority of businesses are not currently recruiting, for all levels except for senior managers more organisations are having difficulty recruiting than are having no difficulty even for unskilled posts. If businesses are having problems recruiting at a time of high unemployment and uncertainty in the labour market then future prospects look challenging as the economy improves.

5.3.3 Respondents reported that the perception of the image of their area and both public and private transport provision has an impact in their ability to recruit. Interestingly public transport provision was scored as having a marginally greater impact than parking provision.

5.3.4 The majority of respondents considered public transport reliability to have an impact on the punctuality of staff. However, road congestion was thought to have an even more significant impact, highlighting the existing perception of congestion in the area. Parking availability was also considered to be an important issue with only three responses given that it had no impact.

5.3.5 Of the responses received, the majority of respondents thought that public transport access and reliability had a moderate or more significant impact on customers and suppliers' ability to get to them. However, road congestion was deemed to be more important, with almost all respondents deeming this quite significant / significant in relation to site access. Both parking and loading space availability were important for some businesses but had less impact on a similar number of others.

5.3.6 Respondents were then asked to rate various parts of the city as to their attractiveness to business. Central Edinburgh is seen as most attractive to businesses as a location. South East Edinburgh fares poorly with the balance of respondents believing it to be a poor business location. However, this does not identify the underlying causes of this perception and it is notable that Edinburgh Park scores even lower than South East Edinburgh.

5.3.7 On the whole, the perception of public transport in Edinburgh was good. Criteria which scored lowest were the speed, comfort and cleanliness of services. Frequency and reliability both scored above average.

5.3.8 The majority of respondents agreed that the frequency and quality of public transport helps make their location an attractive place to operate from. The majority agreed that public transport service is an attractive alternative to the car / taxi.

5.4 Consultation summary and conclusion

5.4.1 The various forms of consultation highlighted concerns and problems with road congestion throughout the city and within the south east quadrant. As already highlighted, the possibility of radical increases in road capacity within an already built up area is extremely limited. The most obvious way capacity can be increased is through investment in public transport. While the city has an excellent bus service it is also apparent that a step change is needed in the capacity and quality of service for the city to remain internationally competitive.

5.4.2 The south east of the city is perceived as less well served by both public transport and the road network and is a less attractive location to invest in than other parts of the city. Given that it is also part of the city with some of the most severe deprivation and hence most in need of such investment this is an issue that needs to be addressed.

5.5 Case studies

5.5.1 To assess the potential impact of improving public transport to the south east of the city and in particular to the BioQuarter five case studies were undertaken of other cities which are also targeting similar types of investment. The five locations/facilities reviewed were:

- Barcelona Biomedical Research Park, Spain
- Lyon Biopole, France
- German Cancer Research Unit at Heidelberg, Germany
- SUNY Downstate Biotechnology Park at Brooklyn, New York, USA
- Virginia Biotechnology Research Park at Richmond, USA

5.5.2 This was done through a combination of desk top research and telephone interviews with each of the facilities. The case studies are presented in full in Appendix 6.

5.5.3 The success of the various biotechnology parks above and other examples such as Cambridge are very much driven by their links to leading universities, research establishments and teaching hospitals. The ability to draw upon key research, funding streams and the legal framework under which research can be undertaken and protected is of fundamental importance.

5.5.4 However, in each case the organisations based on the parks and researchers working in them are drawn from around the world. So other factors such as the quality of life that the city can offer is also important in helping centres to attract the best quality personnel. The ability to recruit from a large labour catchment area is important and is increasingly the ability to project a more sustainable lifestyle. This has encouraged the case study cities to invest in high quality public transport and cycle networks. These networks help connect the bio-medical centres to a larger labour catchment area and national and international gateways such as high speed rail stations and airports.

5.5.5 The parks in the United States occupy opposite ends of the transport spectrum. Brooklyn's Downstate Park is located within the tightly packed streets of New York where car ownership is famously low. As such it places a high value on accessibility by public transport.

Richmond's Biotechnology Park however is situated in a city where the majority of commuters drive to work and reliance on public transport is low. The streets here are broad and designed to accommodate high traffic volumes. Large parking lots close by allow commuters to drive to work.

6 Development opportunities

6.1 Introduction

6.1.1 This section outlines our assessment of the potential impact that a step change in public transport along the south east Edinburgh development corridors could make. Such a change will improve accessibility for residents along the corridors to employment and for employers it will increase their labour catchment area. These changes will increase demand for development along the corridors. In addition improvements in public transport will improve the image and perception of the corridor for both individuals and organisations, again increasing demand for development. It should however be stressed that not all or any of the developments may come forward due to planning or environmental constraints and market conditions; it is the potential that is being identified.

6.1.2 Our initial work reviewed the development potential along the corridor from central Edinburgh through to Cameron Toll and on to the BioQuarter. It was clear from this assessment that further development and regeneration opportunities could be achieved if new public transport links could be connected with the planned Borders Railway. This would enable additional development sites to be opened up as well as improving accessibility to south east Edinburgh from the Borders. The potential for interchange with the Borders Railway can be opened up by extending the corridor of interest to the south towards Eskbank/Dalkeith (interchanging at Eskbank station) or eastwards towards Musselburgh (interchanging at Shawfair).

6.1.3 The analysis therefore considers the base case of central Edinburgh to the BioQuarter and two broad “outer corridors” towards Eskbank/Dalkeith or Musselburgh. In both these cases the corridors are indicative and do not reflect any particular route alignment.

6.2 Waverley to BioQuarter

6.2.1 The corridor from Waverley to the BioQuarter can be broken down into segments reflecting its land use.

6.2.2 The first kilometre or so has a mixture of value/discount retail, an evening economy offer in terms of restaurants and bars with lowish cost office accommodation at first floor level and above. With the exception of one vacant site that has development potential at the Cowgate/South Bridge intersection there is little opportunity for new development along this section. Instead the main opportunity is to improve the retail and leisure offer.

6.2.3 The next section out to Cameron Toll is principally residential in nature although there is a significant amount of tourist accommodation especially B&Bs. Whilst there are virtually no redevelopment opportunities there is the potential for more residential units converting to tourist accommodation thereby providing more bed spaces and employment opportunities although the number of jobs likely to be supported would probably be in the tens rather than hundreds.

6.2.4 Cameron Toll presently offers 28,000sqm of retail space with 1200 parking spaces. Proposals have been submitted to increase the floorspace by a further 11,500sqm but with no new car parking spaces. With further improved accessibility and a higher profile the development could be further increased in size but it is likely that initially at least Cameron Toll will become a stronger and more successful retail and leisure destination rather than a larger one.

- 6.2.5 From Cameron Toll to the Royal Infirmary there are opportunities to accommodate new development although the building of the new Craigmillar Castle Park Cemetery and the status of Craigmillar Castle Park does limit the potential. However, sympathetic development could be accommodated within the Park itself, for example, high quality holiday village accommodation displacing the present recycling centre while there are some sites which are unused or potentially available for redevelopment along the Dalkeith Road. We would suggest that some 100 tourist jobs and at least 100 new residential units could be readily accommodated along this corridor without detriment to the environmental status of the area.
- 6.2.6 The BioQuarter itself offers the potential for a considerable amount of high value added employment. Phases 1-3 are being progressed now and on present predictions by Scottish Enterprise will accommodate some 6,000 jobs. Although some activity is underway at the site, it is likely to take some time to reach its full potential; this time may be reduced if there are significant changes in perception about the accessibility of the site.
- 6.2.7 In the medium term, that is, over a 15 year period we would envisage that a step change in public transport could potentially facilitate some 6,500 jobs and 100 residential units along the corridor. It would also increase the quality and range of tourist accommodation, lead to a stronger and higher quality retail offer and if introduced in line with public realm improvements enhance the quality of the evening economy in the Newington area. A significant proportion of these jobs will be highly skilled where employers will be seeking to recruit from a very wide labour catchment area as well as attracting people to relocate to Edinburgh. Without significant improvements in accessibility, both actual and perceived, it might be difficult to achieve this employment growth within the time frames presently assumed.
- 6.3 BioQuarter to Musselburgh via Shawfair**
- 6.3.1 Beyond the BioQuarter there is considerable development potential for both residential and employment uses. In addition, if improved transport links were made to connect into the planned Borders Railway at Shawfair, it would further increase the employment catchment areas for the BioQuarter and development sites around it. Phase 4 of the BioQuarter is anticipated to accommodate some 6,500 jobs and according to the recent transport assessment (Colin Buchanan, 2010) it is dependent on public transport to support the resultant increased travel demand along the corridor.
- 6.3.2 Given the amount of land theoretically available (it should be stressed not all or any may come forward due to planning or environmental constraints and market conditions although our assessment is broadly in line with the development plans outlined earlier) we envisage in the long term (ie over a 30+ year horizon) that the corridor could readily accommodate some 500,000sqm of commercial development and some 2,000 residential units or various combinations of the two. This is based on the amount of land theoretically available and development densities broadly in line with that already in the surrounding areas.
- 6.3.3 The flexibility of development opportunities in this corridor makes it difficult to determine employment numbers but the area could accommodate 20,000 jobs. This could be a combination of further research, health and/or education type development offering high skilled employment, ie encompassing phase 4 of the BioQuarter. Equally the area with its rail connections could support very low employment density rail distribution facilities. Another lower density employment use could be further extensions of the holiday village idea. In reality the area will probably support fewer jobs and more housing with employment then being a mixture of local service jobs close to the housing developments and higher end employment linked to business/research parks near the BioQuarter.

6.3.4 For the assessment we would propose that the corridor will accommodate 3,000 housing units (7-7,500 people), 50,000sqm of commercial space to meet local needs and 200,000sqm of strategic commercial space aimed at non-local needs. In total the employment space would accommodate 12,500 jobs, using standard employment density figures. Up to 6,500 of these jobs could be associated with the BioQuarter phase 4 development but this is not presumed. It is clear that development on this scale can only be delivered with a radical improvement in transport accessibility. While some residents will take up the new local employment opportunities a significant proportion will need to access the central Edinburgh employment job market as well as the important employment centres outside the centre such as Leith Waterfront and the airport.

6.4 BioQuarter to Dalkeith

6.4.1 The BioQuarter to Dalkeith corridor has many of the same characteristics as the BioQuarter to Musselburgh corridor in terms of potential but proportionally more residential development is likely. Potentially long term development could be in the order of 2,500 residential units (6,000 people) and some 200,000sqm of commercial space. As for the other outer corridor, this is a theoretical figure which may not be achievable for good planning or environmental reasons. Here, employment is also likely to be a mixture of local service jobs and higher end employment extending from the BioQuarter and again includes phase 4.

6.4.2 For the assessment we would propose that the corridor will accommodate 2,500 residential units, 50,000sqm of commercial space to meet local needs and 150,000sqm of strategic commercial space aimed at non-local needs. In total the employment space would accommodate 10,000 jobs. As for the BioQuarter to Musselburgh corridor, up to 6,500 of these jobs could be associated with the BioQuarter phase 4 development and it should be noted that the potential identified for the two corridors is not therefore additive. Access to employment opportunities along the corridor, in central Edinburgh and wider afield will be important.

6.5 Borders Railway links

6.5.1 Both outer corridors beyond the BioQuarter encompass stations on the planned Borders Railway, with the opportunity to provide improved access from the Borders to development sites in South East Edinburgh. The BioQuarter to Musselburgh corridor theoretically also offers the opportunity of connecting with rail services from North Berwick and Dunbar further increasing employment catchments.

6.5.2 SESplan suggests that there is potential for nearly 20,000 homes along the Borders Railway corridor and one could expect a significant proportion of new residents seeking employment in Edinburgh.

6.6 Conclusion

6.6.1 The above assessments suggest that a significant step change in public transport accessibility and service to the south east of Edinburgh could facilitate large scale residential and employment development. In summary the scale of these developments by section are outlined in Table 6.1.

Table 6.1: Summary of development potential

Corridor	Employment*	Housing units
Waverley - BioQuarter	6,500	100
BioQuarter- Dalkeith	10,000	2,500
BioQuarter- Musselburgh	12,500	3,000

* BioQuarter phases 1-3 (6,000 jobs) included in the inner, Waverley to BioQuarter Corridor. Up to 6,500 of the employment potential of either outer Corridor could be associated with BioQuarter phase 4 and the two outer corridors beyond the BioQuarter are not therefore additive.

6.6.2 Most of this development is in line with the aspirations set out in the relevant policy documents and indeed some development is already underway or planned. Without, substantial investments in transport however such development will not occur as quickly or at the level of density that could be supported by improved public transport. For example, the traffic assessment for phase 4 of the BioQuarter refers to the fact that the road network could not support development at the proposed scale without improved public transport and that the public transport mode share of the complete BioQuarter and Royal Infirmary is anticipated to be 46% and 35% in the morning and evening peak respectively. It is clear that without public transport improvements the developments will not progress as proposed.

7 Economic impact, jobs and GVA

7.1 Economic impact

- 7.1.1 Given the projected growth in employment and population in the wider Edinburgh and Lothian region, (for example, the 2008 update to the Lothian Housing Needs and Demand Study suggests household growth is projected to continue at a higher rate than population growth - at 1.1% p.a. compared with 0.6% p.a.) the additional housing and employment discussed in the previous section is not additional to Edinburgh unless it is unable to be accommodated elsewhere in the region. What is potentially additional to the regional and national economy is the attraction of highly skilled employment related to the development of the BioQuarter and possible future phases of development.
- 7.1.2 There are two main types of economic benefit flowing from improvements in public transport to and from south east Edinburgh. The first relates to development that is facilitated in the area by the accessibility and image improvement that such investment will bring. The second relates to the increase in productivity that occurs to existing jobs in the central area due to improvements in effective density, known as agglomeration benefits.
- 7.1.3 The economic impact of development is dependent on the nature of employment attracted. In assessing the economic impact of significant public transport improvements in south east Edinburgh that facilitate the level of development outlined above, a conservative approach has been taken. It has been assumed that the housing and the local employment development (such as retail facilities and local services) would go ahead anyway somewhere else in Edinburgh or the surrounding area if it could not take place within south east Edinburgh. The assessment therefore includes no additional local or regional economic benefit of such development; it is assumed just to be displaced from one part of the city to another, albeit from a more socially deprived area to a more prosperous one. The upgrading of the retail and evening economy offer to the south of Waverley is likely to have a material positive economic benefit to the local area and potentially to the city as a whole if it helped retain spending within the city. Although there is plenty of anecdotal evidence (Financial Times, 2010) it is very hard to quantify the additional impacts of such benefits.
- 7.1.4 It is, however, assumed that employment within the BioQuarter (with the exception of the majority of the academic and clinical healthcare facilities) and the other strategic commercial space in either the BioQuarter to Musselburgh or BioQuarter to Dalkeith corridor is aimed at non-local occupiers. That is, occupiers who have a choice to locate in Edinburgh or elsewhere.
- 7.1.5 Based on the case studies of similar facilities it is apparent that they attract a mixture of indigenous and internationally mobile investment. The ratio of one to the other is dependent on a wide range of factors such as the links between public health and research services and the private sector, the degree of spin-offs from university and research centres and the general attractiveness of the location to international investment. In relation to the latter it is clear that Edinburgh, with its good international connectivity, highly skilled workforce, excellent quality of life, leading universities and research centres is a highly competitive location. The BioQuarter itself is marketed to potential inward investors and it has few competing locations within Scotland as a whole.
- 7.1.6 Economic assessment work carried out by Scottish Enterprise has estimated that 40% of the jobs accommodated on site will be additional to Scotland, which is reasonable and potentially conservative in comparison to similar developments internationally. Given potential competing sites within Scotland for life sciences it would seem reasonable that

Edinburgh would capture one third to a half of the balance of investment based on the strength of its economy. Hence the additionality for Edinburgh has been assumed at 60-70%.

- 7.1.7 It is therefore reasonable to assume that, with regard to the BioQuarter that 60-70% of the jobs attracted to the site are new to Edinburgh and the wider region and 40% are new to Scotland as a whole, in line with Scottish Enterprises' analysis of the economic impact of the BioQuarter.
- 7.1.8 It is also apparent from the case studies that the ability to recruit from an international workforce of researchers and skilled staff is a critical success factor. This requires a large labour catchment area and transport systems that are attractive to a work force that tends to be more environmentally concerned than the norm. In making an assessment of economic benefits, it has also been considered that facilitated development may be *dependent* on a step change in public transport (as well as other factors) or that it may only be *accelerated*.
- 7.1.9 We have taken the view, based on the case studies and the speed of development of areas such as London Docklands which have clearly benefited from the addition of new public transport, that the provision of high quality and sustainable transport links will enable the BioQuarter phase 1-3 development to be built out three years faster than would otherwise be the case. This was discussed and agreed with Scottish Enterprise. In practice, the assumption we have used is that the development would be built out and occupied at a constant rate over a fifteen year period without the improved transport link and twelve with it.
- 7.1.10 The opening of the Jubilee extension and expansions and upgrades of the Docklands Light Railway (DLR) have seen employment in those years leap by more than twice the long term average in employment growth. If a single increase in employment and hence development was achieved at the BioQuarter this would be broadly equivalent to a three year faster build out. Similarly, evidence from the BART transit system in San Francisco found that the distribution in commercial development between areas served or not served by the transit changed as the system was implemented and the build out rate was markedly higher in those areas served by it (Landis, J and Loutzenheiser D, 1995). This was to such an extent that the volume of construction over 10 years in areas not served by the transit system was equal to 6 years in areas served by it. This would suggest an acceleration in development of 3 years, from 15 down to 12 years is a reasonable - if not a conservative - approach to representing the impact that a radically improved transport link to the BioQuarter would bring about.
- 7.1.11 In this instance the benefit to the regional economy is estimated to be in the region of £330-385m (40 year npv discounted at 3.5% for first 30 years and 3% thereafter) and £220m to Scotland. This is calculated by taking GVA output per job by economic activity from the Scottish Annual Business Statistics and multiplying that by the number of jobs created by the site. Using the Scottish Input-Output tables the multiplier effect is also taken into account, that is, the additional supply chain expenditure arising from the spend related to the initial employment. A 40 year net present value is used as that is the average life of modern commercial buildings and the standard government discount rates as set out in HM Treasury's Green Book.
- 7.1.12 In the two outer corridors beyond the BioQuarter it is assumed that commercial development attracting internationally mobile investment will be *dependent* on a step change in public transport as well as other factors. It is also assumed that part of these developments could be a further expansion of the BioQuarter itself - in effect phase 4 of the that development. Effectively this would be a doubling of BioQuarter activity in the long term, broadly in line with aspirations for the future development of a bio-medical cluster in the area and supporting services that would otherwise not be attracted to the region or

Scotland. Other occupiers, if the development was not available are assumed to locate elsewhere in Edinburgh or the wider region and hence bring no regional or wider benefits. So the same additionality figures have been used as for the BioQuarter. That is, 40% of jobs are additional to Scotland and 60-70% are additional to Edinburgh.

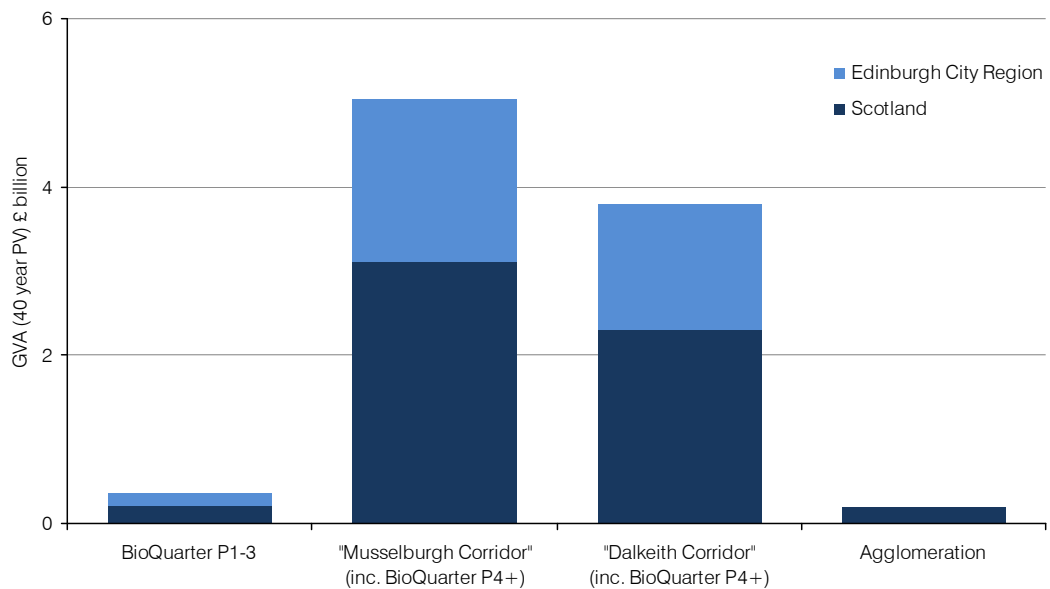
- 7.1.13 For the BioQuarter to Musselburgh corridor the equivalent of 130 additional construction jobs (those related solely to the development that would otherwise not be attracted to Edinburgh) and 6-7,000 permanent additional regional jobs by the occupiers (4,000 additional Scottish jobs) could be created over a 30 year period. The resultant city region benefits are estimated at £4.7-5.4bn (40 year npv) and the national benefits at £3.1bn calculated in the same way as explained above. Development is assumed to occur at a constant rate over a 30 year time period ignoring any property cycles. In reality development will occur in more “lumpy” stages but this has little impact on this broad economic assessment.
- 7.1.14 In the case of the corridor from the BioQuarter to Dalkeith the equivalent of 100 additional construction jobs and 4,500-5,250 permanent additional regional jobs by the occupiers (3,000 additional Scottish jobs) could be created over the same time frame. The city region benefits are estimated at £3.5-4.1bn (40 year npv) and the national benefits at £2.3bn.
- 7.1.15 Again it should be stressed that these should be considered as potential impacts which are dependent on a range of assumptions which may in reality not be realised. In particular, they are directly related to the assumed proportions of jobs that are regionally/nationally/internationally mobile.
- 7.1.16 The second source of economic impacts is agglomeration benefits. The theory of agglomeration is that when carrying out economic activity in a dense area, production is more efficient. This occurs for a number of reasons:
- A deeper and larger labour market
 - Greater specialisation in supply
 - Knowledge spillovers, with expertise being more widely shared
- 7.1.17 As a result, agglomeration theory explains why organisations desire to locate in a city centre. Despite the fact that rents are higher, commuting times for workers are longer and there is more overcrowding on the transport network, organisations are willing to incur these costs because they are outweighed by the productivity benefits of agglomeration.
- 7.1.18 There is a clear link between density of employment and productivity, as density rises so does productivity. Density can be a function of the number of people within a certain area and/or accessible within a certain time period. So transport improvements can increase the effective density of a location.
- 7.1.19 Using the standard Department for Transport methodology to calculate these benefits they equate to just under £200m (again 40 year npv) arising from improving access and supporting economic growth in Edinburgh city centre. These are benefits to both Edinburgh and Scotland.

7.2 Summary and conclusion

7.2.1 The analysis in this section is clearly based on a number of key assumptions that may or may not be correct. However, we would argue that the assumptions are in line with what has occurred elsewhere and are conservative.

7.2.2 Figure 7.1 shows the scale of economic potential arising from accelerated development in Phases 1-3 of the BioQuarter, further dependent development in the two outer corridors (either of which potentially including phase 4 of the BioQuarter) and from agglomeration benefits. This illustrates that the main regional and national economic benefit could arise from extending high quality public transport provision beyond the BioQuarter to facilitate the development of further extension of this important economic and research cluster. The benefits at the BioQuarter itself are more to do with the speed with which development occurs and therefore have a lower present value. It must be emphasised that realising this economic potential is also dependent on a range of other critical factors.

Figure 7.1: Scale of economic potential from accelerated development



7.2.3 The total potential benefits of radically improved transport links along the corridor from Waverley to Musselburgh (via the BioQuarter and Shawfair) are in the region of £5.0-5.8bn for Edinburgh city region and £3.5bn for Scotland while for the corridor from Waverley to Dalkeith (also via the BioQuarter) they are in the order of £3.8-4.5bn for Edinburgh city region and £2.7bn for Scotland.

8 Other potential impacts

8.1 Evidence from elsewhere

- 8.1.1 There have been numerous evaluations done of the wider economic and social impact of urban public transport schemes, especially those using dedicated rights of way such as light rail, trams and bus rapid transit. This dedicated right of way is key in the urban context as it helps to mitigate the impact of road based congestion.
- 8.1.2 The evidence from both the UK and overseas finds that successful systems tend to offer all or the majority of the following elements:
- Access into town and city centres with permanent infrastructure. *e.g. access into Edinburgh city centre and connecting with existing tram line 1.*
 - Predictable, regular and reliable journey times and service patterns.
 - Accessible and visible stops.
 - A high quality of ride throughout the entire journey.
 - Short dwell-times: due to prepayment and multi-entrances/exits.
 - High passenger carrying capacity.
 - Park and Ride facilities for car users. *(Possible if extended beyond BioQuarter)*
 - Integration with new developments. *e.g. BioQuarter and beyond*
 - Linking major traffic generators/attractors. *e.g. Waverley station, Royal Infirmary, Cameron Toll.*
 - Integration with other modes of transport. *e.g. possible interchange with planned Borders Railway stations.*
 - Permanence: giving individuals and business confidence to make location decisions. *(Especially relevant beyond the BioQuarter).*
- 8.1.3 The benefits of such schemes are a reduction in car use, evidence shows that about 20% of peak hour and 50% of weekend passengers using UK tram/light rail schemes previously travelled by car. There is also evidence that UK light rail/tram schemes have provided business with better access for customers; improved access to labour markets, supporting business expansion and providing the confidence to make investment decisions based on evident commitment to improved public transport. Increased development activity has brought a “buzz” to areas served by the tram schemes.
- 8.1.4 The regeneration and development impact of such schemes in the UK builds on a similar experience in France where improved public transit was linked with widespread pedestrianisation and streetscape improvements.
- 8.1.5 The physical presence of the infrastructure needed for fixed link schemes compared, with the less tangible presence of bus-based schemes, is undoubtedly a key factor in investors and the public’s favourable perception. The confidence that is instilled from a very visible, long term commitment to improved public transport and the feeling that this indicates an area is “going places”, is a common response in user surveys and focus groups.
- 8.1.6 Social inclusion is another important positive benefit. Ease of access for the mobility impaired and ease of use for those with learning difficulties has been highlighted above. While the provision of direct and reliable links from areas of social exclusion and high unemployment to job markets has led to marked falls in unemployment in the former.
- 8.1.7 The image that a city presents to both the outside world and its own citizens is important in terms of attracting and retaining mobile investment. Many cities market themselves on the back of the quality of their transport infrastructure. As Eddington highlighted it is important

for cities to be able to offer the largest possible labour catchment area to employers and good quality links to international gateways.

- 8.1.8 Case studies of potentially competing cities for bio-medical investment highlighted a number of important messages. There are a wide range of factors that organisations take into account when making location decisions. For those in the bio-medical and related high-tech activities key location factors include links to world class research and universities, the legal framework within which research can be undertaken, availability and cost of a skilled workforce, and quality of life as well as the usual business criteria of operating costs (including property), taxation, access to markets and suppliers and general quality of infrastructure.
- 8.1.9 Edinburgh scores highly on many of these factors. However, if developments at and around the BioQuarter are to compete internationally potential investors need to be convinced they can draw upon a labour catchment area that goes beyond the city given the specialist skills needed. This means not just good car based access but good public transport access as well by rail and road to maximise the possible labour catchment area. It is notable that competing bio-medical centres such as those in Lyon and Barcelona are on metro and tram networks linking with the city centre, intercity rail stations and airports as well as residential areas. It was also noted by interviewees that these research centres attract young highly skilled individuals from around the world who are often more eco-conscious than the workforce as a whole. So in the case of Barcelona while car parking is readily available the vast majority of employees access the site by more sustainable modes including public transport, walking and bicycle.

8.2 Travel horizons and social inclusion

- 8.2.1 As highlighted above evidence from other cities with high quality public transport shows there are a range of other intangible but no less important benefits arising from these systems. Choice of transport mode is closely correlated to socio-economic status and gender and this has important consequences on social and regeneration policies. Whilst Edinburgh has an excellent city wide bus service used by all sectors of society it is still the case that its use is heavily biased towards lower socio-economic groups and is more heavily used by women. Rail use on the other hand is biased towards higher income groups and men. Whilst car use tends to be undertaken by middle to higher income groups and by men more than women. Interestingly use of tram systems is far more representative of the socio-economic and gender make up of the areas that it serves.
- 8.2.2 Low travel horizons are defined as an unwillingness to travel long journey times or distances. The ability and willingness to travel is key to fully participating in the economic, social and cultural life of modern society. Society has become more travel intensive as individuals either desire or are required to take on a greater number of roles and services are centralised. This has led to the concept of 'time poverty', that is, people do not have the time to do everything that they need to do within the time available.
- 8.2.3 While society has become more travel intensive, the average amount of time people are prepared to spend travelling remains at around one hour per day on average. Research shows that this figure is relatively constant around the world in different societies and over time.
- 8.2.4 So, as we are required or desire to travel more but are not prepared to spend any more time travelling, then we must travel faster and/or more efficiently (e.g. more linked trips). Individuals who are unable or unwilling to switch to faster modes of transport will experience lower level of opportunities in relation to training, work and services than society as a whole.

- 8.2.5 In examining the time people are prepared to travel, consideration also needs to be given to the economic concept of 'generalised cost'. Generalised cost combines the monetary cost of a journey with the time taken for the journey and various attributes associated with that journey (e.g. wait time, comfort of travel) in financial terms – in other words it tries to look at all aspects of the journey as experienced by the traveller. This enables the full cost of a journey to be compared across modes, and helps explain why people choose certain modes for various journeys.
- 8.2.6 The impacts of low travel horizons vary depending on location. Inner Edinburgh is very different from Dalkeith and Musselburgh. For example, low car ownership is less of a barrier to opportunities in inner Edinburgh than the other two centres. In the former very high population densities support an extensive range of services and opportunities within compact geographical areas. However, the ability to obtain such a wide range of services and even jobs in a local area can lead to an inward looking attitude and unwillingness to travel far in terms of distance or time. So as the economy changes and employment opportunities alter individuals may remain in their local area rather than venturing out to seek new employment. This in part explains why there remains the problem of high unemployment in parts of south east Edinburgh.
- 8.2.7 This attitude is also passed down to the next generation who in turn tend to seek training and employment in their local area thereby missing out on the full range of opportunities that are available within Edinburgh. This is highlighted in the far greater diversity of jobs available in the centre of the City than in the surrounding areas.
- 8.2.8 There are a wide range of factors that impinge on individuals' travel horizons. These relate both to accessing the transport system and then to using that system to its maximum potential. Findings of the research highlight a number of broad factors that limit travel horizons namely:
- Financial issues;
 - Physical accessibility;
 - Security;
 - Information;
 - Time poverty;
 - Limited mental geography and aspirations;
 - Staff attitudes; and
 - Passenger attitudes.
- 8.2.9 Travel incurs a cost and an inability to afford transport reduces travel horizons. Those who do not use bus passes will avoid interchanging if that means having to buy another ticket.
- 8.2.10 Despite huge improvements in physical access to the bus network (i.e. a 100% low floor bus fleet) there are still many physical constraints to travel. These include a lack of seats at bus stops, buses not stopping near the kerb, the inability to get buggies on buses due to other passengers crowding on first and physically being unable to access the bus stop.
- 8.2.11 Fear of crime is a factor discouraging the elderly, young people, ethnic minorities and women from travelling, especially to unknown areas. It relates to access to and from public transport nodes, waiting at bus stops and on public transport services.
- 8.2.12 Despite the increasing availability of transport information, lack of knowledge about the transport system including fare structures is a factor limiting travel horizons. That is, the lack of accessible and understandable information is still a major inhibitor to travel.
- 8.2.13 This lack of knowledge is a major inhibitor to people travelling off their local bus network. The research found that individuals are content to travel to any destination that is directly

served by their local buses but are less willing to travel to destinations which may be closer but require an interchange.

- 8.2.14 The need to undertake an increasing number of activities in a limited time can severely restrict travel horizons. This time poverty principally affects low income groups who cannot “buy” time from other people, (e.g. through the use of cleaners and child minders). The need to pick up children at fixed times and a high penalty for being late for work severely inhibits travel horizons for these groups.
- 8.2.15 Many individuals do not travel far because they do not want to. All their needs are met in their local community and as they do not travel they are unaware of opportunities outside their local area. Hence they are in a ‘catch 22’ situation of not travelling and therefore do not know what opportunities they are missing, so they do not travel.
- 8.2.16 Linked to this it is also the case that some individuals may have limited aspirations. They may know there are better opportunities available elsewhere but still are not prepared to travel to take them up.
- 8.2.17 The attitude of staff can be a factor in reducing individuals’ willingness to travel. This can include poor driving skills, an unwillingness/inability to manage passenger behaviour, lack of understanding of mobility impaired passengers needs and general poor attitudes to passengers. Antisocial behaviour by fellow passengers can also reduce certain groups’ willingness to travel.
- 8.2.18 Research suggests that income is the key determinant of travel horizons with age, employment status, disability and family size other key factors.
- 8.2.19 Modern fixed routes and networks are more readily navigable by users especially the mobility impaired, those with learning difficulties and occasional users (including tourists). While low floor buses and Edinburgh’s excellent bus network and information makes it easier to get around the city compared to some other locations it is still less attractive to many types of potential users than alternative fixed route systems.

9 Conclusions

9.1 Conclusions

- 9.1.1 There is a clear link between economic growth and transport investment. Good transport provision is necessary for Edinburgh to remain competitive with other cities, both in the UK and abroad.
- 9.1.2 Good road transport links are seen to be a positive attribute of south east Edinburgh currently and, although the area is *perceived* as being less well served by public transport than other parts of the city, bus provision as part of the city's excellent bus network, seems to address the current market need. Nevertheless, this area has some of the largest concentrations of deprivation in the city and this needs to be addressed both directly and as the labour market catchment for potential future investment.
- 9.1.3 Within densely built up conurbations, it is difficult to provide additional capacity for private transport and public transport has to play an increasingly important role in capacity enhancement required to facilitate future economic growth. Several high profile proposals for improvements in public transport capacity (and quality) in south east Edinburgh have previously been made. Most notable is a tram line as an extension to the system now under construction but also an orbital busway and rail schemes. Accessibility analysis has shown that simple service level improvements (journey time and frequency) should not necessarily be seen as the objective of improved public transport.
- 9.1.4 The development potential of a corridor from Waverley to the existing BioQuarter has been considered, as well as that of two outer corridors from the BioQuarter to Musselburgh (via Shawfair) and from the BioQuarter to Dalkeith (via Eskbank) In practical terms, considerable potential for future housing and/or commercial development has been identified in each of these areas. Whilst much of this will support local needs, it will also enable Edinburgh to offer high quality sites to expand its offer to regional and nationally mobile organisations with the bio-medical cluster.
- 9.1.5 The instigation of the BioQuarter development is a good example of recent investment in the area, which illustrates future potential for inward investment associated with nationally and internationally mobile labour markets. Experience elsewhere in Europe suggests that various factors are critical to the success of this type of development and therefore to decisions of investors as to location. These include links to leading universities, research establishments and teaching hospitals as well as attributes of their location such as the ability to draw upon key research, funding streams and the legal framework under which research can be undertaken and protected.
- 9.1.6 Edinburgh scores highly on many of these factors. However, if developments at and around the BioQuarter are to compete internationally, potential investors need to be convinced they can draw upon a wide labour catchment area, given the specialist skills needed. This means not only good car based access but also (and especially if limited road transport capacity is to be managed by constraining parking provision) good public transport access. Because of the proportion of relatively high value jobs at such sites, the quality of that public transport is also likely to be viewed critically.
- 9.1.7 It is notable that competing centres draw upon staff from around the world which requires not only the offering of a high quality of life but increasing the offer of a more sustainable life style. This has encouraged the case study cities to invest in high quality public transport and cycle networks. These networks help connect the bio-medical centres to a larger labour

catchment area and national and international gateways such as high speed rail stations and airports.

- 9.1.8 Although the existing bus service level is perceived to be good, additional service improvements are not necessarily able to provide adequate capacity to serve a growing BioQuarter site as well as the full potential for other development along the corridors considered. Furthermore, bus service improvements would not provide the step change in the perception of the area necessary to attract the organisations and skilled staff necessary to maximise the full potential of an expanded BioQuarter on a world stage. Other biotechnology sites across Europe have benefited from significant investment in major public transport improvements.
- 9.1.9 Providing improved transport links to and beyond the BioQuarter, connecting with the planned Borders Railway at Shawfair or Eskbank, offers the potential for significant long term economic development. Given the amount of land theoretically available (it should be stressed not all or any may come forward due to planning or environmental constraints and market conditions) we envisage in the long term (i.e. over a 30+ year horizon) that both of the outer corridors beyond the BioQuarter have the potential to deliver a substantial amount of the new housing and employment development needed for Edinburgh to continue its strong economic performance. This is broadly in line with the aspirations set out in the region's various spatial policy documents.
- 9.1.10 In conclusion, the evidence indicates that introducing a major transport intervention in the south east of Edinburgh could be a catalyst to unlocking the significant economic development potential identified in this report.
- 9.1.11 The ability to extend an existing high quality, fixed link system such as the tram route now under construction would be an obvious option to realise this. However, It is not the purpose of this document to propose a mode of transport and this should be established using an objective-led approach, acknowledging the economic potential identified in this study, and incorporating the applicable transport planning frameworks (for example the Scottish Transport Appraisal Guidance - STAG).